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In Two Sections
SECTION 1

JANUARY 1957

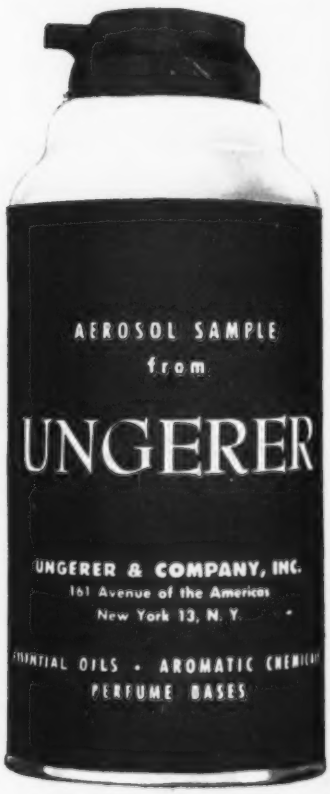
THE MAGAZINE OF TASTE AND SCENT

Nine top authorities offer latest practical help on how to plan Aerosol Packaging

A 1957 Guide to Aerosol Packaging

Starting Page 55

ADVANCED AEROSOL RESEARCH



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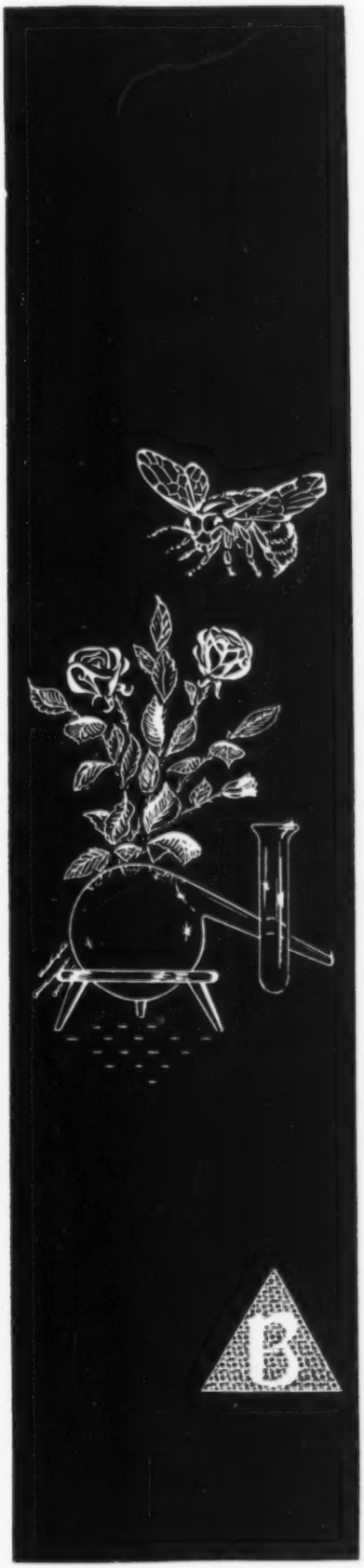

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JANUARY 1957

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Editorials . . .

Volume of Perfume in Aerosols . . .

Eliminating numerous industrial products in aerosols which are perfumed only sporadically if at all, the use of aromatics in products packed in aerosols has reached interesting proportions. Based on the analysis for 1955 of the official market research report of the Chemical Specialties Manufacturers Association it is possible to offer some figures of interest. Room deodorants accounted for 53,437 lbs. of perfume oil; hair lacquers, 140,438 lbs. of perfume oil; personal products such as colognes, lotions, shampoos, sun tan preparations etc., 45,552 lbs. of perfume oil; and shaving creams, 40,873 lbs. of perfume oil. This makes a total of 307,303 lbs. of perfume oil used by the foregoing. All types of insecticides used 77,100 lbs. and pharmaceutical preparations employed 2,513 lbs. of perfume oil.

A Better Drug Store Selling Job . . .

No busines can decide whether it will or will not have public relations. As pointed out by Harry A. Kimbriel executive vice president of the National Wholesale Druggists Association, from the instant a business establishes itself it has public relations. There is no mystery in good public relations. Earn and deserve a reputation and help to create and promote better understanding of the business, its personnel and its function in the community.

In the past year the N. W. D. A. has rendered yeoman service to retail druggists in helping them to develop better public relations to their financial well being as was evidenced by numerous letters from druggists and wholesalers testifying to the benefits they obtained from it.

As a result of the marked success of the 1956 program, another well considered program for 1957 has been launched which features departments in the front of the drug store. The "Plus Sales" kit to help the drug store do a better selling job is now being distributed. It describes the contents of the P. S. package. Briefly these are: (1) Window and counter displays to pre-sell customers on related items because customers often forget their particular needs. (2) Customer reminder signs—counter reminder hands which offer promotion possibilities. (3) Booklets for salespeople. (4) A booklet about the store with a check list to enable the proprietor to evaluate his store, his displays, his personnel and himself. It reveals the opportunities for department by department promotions and helps the druggist plan merchandising activities more effectively. (5) P. S. Wheel of Opportunity—a device for extra sales. When a customer buys an item the wheel is dialed to find related items. In many cases a suggestion means a sale. (6) Baby Sitter reminder cards which provide a unique way of emphasizing professional services to parents of small children. (7) Contest entry blanks. These enable the salespeople of the drug store to tell how they applied the principles from the P. S. book "For Your Personal Success in Retail Drug Store Selling" and for the proprietor to show how the booklet "Your Drug Store Plan" helped to organize a selling department. War savings bonds are offered as prizes.

A film prepared by the association with the aid of Life magazine shows the progress of pharmaceutical and health services since 1900. It also presents the druggist in his true character as a leader; and incidentally it is an exposition of the miracle of distribution. There is also a second film. Both are intended to be shown at meetings of the sales staffs of both retailers and wholesalers.

While just started the program is being carried out with energy and enthusiasm. It seems sure to be of help to all concerns which distribute any of their products through drug stores.

Repeal of Cosmetic Excise Tax . . .

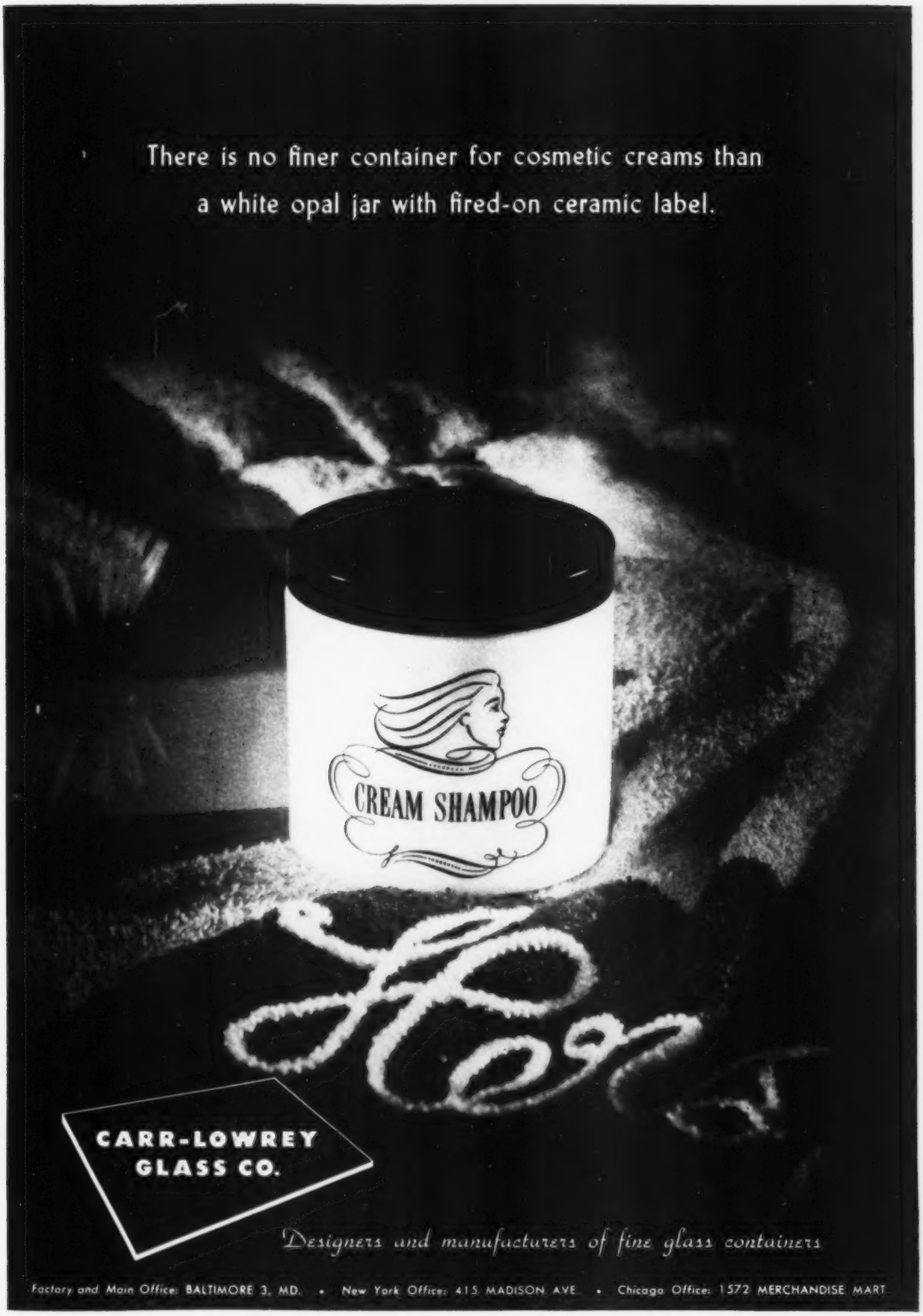
As Congress assembles for the 85th Congress in the light of pressing problems, foreign and domestic, the feeling in Washington among those close to the scene is that there is a very dim chance of either repealing or modifying the cosmetic excise tax. Possibly in 1958 some relief may be granted. Hearings have already been held and more will probably follow but action is viewed as far off.

Make Customers for Your Customers . . .

When William Colgate founded Colgate & Co. in downtown New York back in 1806 he laid down a keystone formula: "Make Customers and Make Customers for your Customers." His first sale was of a bar of soap to a man who lived so far uptown that it cost more than the profit to deliver it. Despite this he made the delivery and as a result made a permanent customer.

The principle of making customers by making customers for them has been steadily adhered to for the past century and a half and has proved to be the seed from which has grown the mighty oak known today as the Colgate-Palmolive Co., one of the very largest and one of the most highly respected companies in the industry doing a world wide business of over $300,000,000 annually. In the 150 years of its life the company weathered seven wars and a number of serious business depressions but its policy remained unchanged.

As an example of how the principle is carried out it might be mentioned that the Toilet Goods Division, for instance, issues fair trade contracts in all states having fair trade laws. The same price is given to everybody—to all classes of trade, large or small dealers, affording all the same opportunity for profit and service. The company pays freight on direct shipments. All toiletry packages show the full advertised price. Practically every sound modern method of helping dealers increase their sales and profits is supplied to them with tested sales promotion equipment. Consistent, powerful newspaper, magazine, radio and TV advertising, planned and executed by skilled advertising talent is employed to build up sales for all dealers. Numerous other helps which are given to dealers might be cited to show how earnestly the company is interested in the success of its dealers. Now as the company, old in years but young in spirit, is well on its way to its second century and a half of life, new and better ways of doing things as times change and methods improve, which were never even contemplated by the founder, will be inaugurated and faithfully carried out: for the principle is fundamentally sound: "Make Customers by Making Customers for Them."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LAST MINUTE NEWS . . .

"What's Ahead in Fragrance" At A.S.P. Symposium March 20

The third Symposium on Fragrance of the American Society of Perfumers will be held in the Essex House, New York, March 20. The topic will be "What's Ahead in Fragrance." The speakers will include Camille H. Bourguet, American Aromatics Inc.; H. C. Saunders, Givaudan-Delawanna Inc.; Dr. Paul Z. Bedoukian, perfume chemist; Amos Turk, odor engineer; Ernst T. Theimer, van Ameringen-Haebler Inc.; and H. Gregory Thomas, president of Chanel Inc. Ample opportunity will be given for full discussion of the topic and of its importance to the entire cosmetic and fragrance industry. Dr. Paul G. I. Lauffer is chairman of the Symposium Committee, the other members of which are Pierre Bouillette, Dr. A. T. Frascati, Everett Kilmer, Dr. Oliver L. Marton, Dr. Ernest Shiftan and Christian Wight.

Value of Peppermint Crop Up—Spearmint Below Average

A value of $12,466,000 has been placed on the 1956 peppermint crop by the Department of Agriculture. This was below the $8,543,000 average for the six year period from 1949-1954 but above the 1955 crop by $1,161,000. Spearmint likewise was above the 1955 crop as the 1956 value was estimated at $2,844,000 which was $341,000 above that of 1955. The 1956 crop value was above the six year average of $2,742,000.

Procter & Gamble Co. Acquires Charmin Paper Mills

Procter & Gamble Co. has acquired substantially all of the assets of Charmin Paper Mills, Greenway, Wisc. which will become a wholly owned subsidiary. Charmin Paper Mills operates pulping, paper making and converting facilities in Greenway. It also makes facial tissue, paper towels, toilet tissue and paper napkins.

Sales Through Vending Machines Total About $1,900,000,000

Sales of all types of products through vending machines increased about $200,000,000 in 1956 to make a total figure of $1,900,000,000 in sales during the year, according to the National Automatic Merchandising Assn. The commodities sold range from perfume in small vials, soft drinks, a few cosmetics to various food and tobacco products. While the method has appealed to a measureable extent to the flavoring products industry chiefly through the sale of soft beverages, its appeal to cosmetic manufacturers has been limited. Actual figures of sales of the soft beverages and cosmetics are not yet available.

Out-of-State Tax on Imports Unconstitutional in Illinois

Tax on out-of-state imports in Illinois has been declared unconstitutional by the Illinois Supreme Court. The last legislature set up a 2½% tax on goods purchased outside the state to plug loopholes in the state's sales tax income. The court held that the tax is illegal because it did not apply uniformly to all users of personal property but pointed out that it would be possible to have a constitutional use tax. The decision it is estimated will cost the state a million dollars monthly in income.

Lanvin Avoided Dock Strike By Shipping Perfume by Air

During the recent dock strike in New York Lanvin Parfums, New York, imported 7½ tons of Lanvin perfumes valued at over six million dollars by airplane. The shipment of perfume intended for the Christmas trade in the United States was on the dock at LeHavre, France, ready to be shipped by steamer; but when it was evident that the merchandise might not be landed the company arranged for transportation by airplane in ample time to supply the Christmas trade. It cost the company $10,000 more to ship the perfume by airplane, but this was largely offset because the company saved the cost in weight of heavy crating. The airplane had to be air conditioned and pressurized to handle the shipment.

Harriet Hubbard Ayer Now Celebrating Fiftieth Anniversary

While it is now 50 years since Harriet Hubbard Ayer's name appeared on jars and bottles of cosmetics, that name was well known as an authority on beauty 25 years before that. Harriet Hubbard was born in Chicago in 1854 and at 15 married Herbert C. Ayer. She wrote on beauty and women's rights before she was 20 and was translating French books when she was 23. When she was about 38 she brought out a book "My Lady's Dressing Room" partially adapted from the work of Baronne Blanche of Paris. She also was a beauty columnist for the old New York World. Then ready-to-use cosmetics were unknown. Her formulas covered every contingency her readers presented. She told her readers how to make lotions by distillation at home, how to prepare face creams in a custard boiler and how to develop fragrances through percolation. She held that it was every woman's duty to improve her appearance particularly after she is 30. In 1899 Mrs. Ayer brought out a 543 page book on Principles of Health and Beauty. Later she brought out a line of cosmetics which were made available to women. The firm of Harriet Hubbard Ayer developed into a thriving business which was carried on by her descendants until the business was sold to Nestle-LeMur Co. a few years ago. In observance of the fiftieth anniversary some of the earliest and most popular fragrances are to be revived and made available again.

Drug and Cosmetic Employes Operate 56 Credit Unions

Employes of cosmetic and drug companies now operate 56 credit unions according to the Credit Union National Assn. The unions are owned and operated entirely by the employes to encourage thrift and regular saving and to provide personal loans for one another at low cost. About 190 employes and dealers of the Beauty Queen Co. who work in Washington, Baltimore, Richmond and Hattiesburg, Miss. have an interest in the new Beauty Queen Company's Federal Credit Union which was recently organized under a government charter.

Full Name and Address of Maker Must be on Labels in Canada

The name of the manufacturer or distributor must appear in full, not abbreviated, together with the address on the inner and outer labels of cosmetics sold in Canada under regulations issued under the Canadian Food and Drugs Act. The name and address of the manufacturer or distributor need not appear on the main panel of the label but must appear somewhere on the package.

Three Cited for Using French Labels on Domestic Perfumes

The Federal Trade Commission has cited Joseph Somilo trading as L'Argene Products Co., Harsum Distributors and Parfumerie Lido Inc. and Berthold Dilloff, who trades as Lido Products Co., all of New York City for using French labels to represent domestic perfumes as imported ones. The FTC complaint does not allege that American perfumes are inferior but holds that the public has a right to know what it is buying.

Recommendations to Guide Governments on Food Additives

Recommendations to guide governments in the formulation of national food laws affecting chemical additives in foods have been drawn up by a group of experts who met in Rome, Italy, Christmas week, under the sponsorship of the Food and Agricultural Organization. Non-nutritive substances which are added to food intentionally such as flavors, colors and preservatives were discussed. The conclusion was reached that food additives have a legitimate use in food processing. Such additives were held to be justified where they help to maintain the nutritional quality of food, enhance its keeping properties and make foods more attractive to consumers. Conversely the conference held that the use of additives should be prohibited when they are used to disguise faulty processing and when they deceive the consumer. It was held that consumers should always be informed either by labeling or otherwise of the presence of additives in the food they buy. The group agreed that each type of additive must be rigorously pre-tested and the decision to use the additive must be based on the judgement of properly qualified scientists. This implies that trained food inspectors, control laboratories and reliable analytical methods must be available to enforce national regulations.

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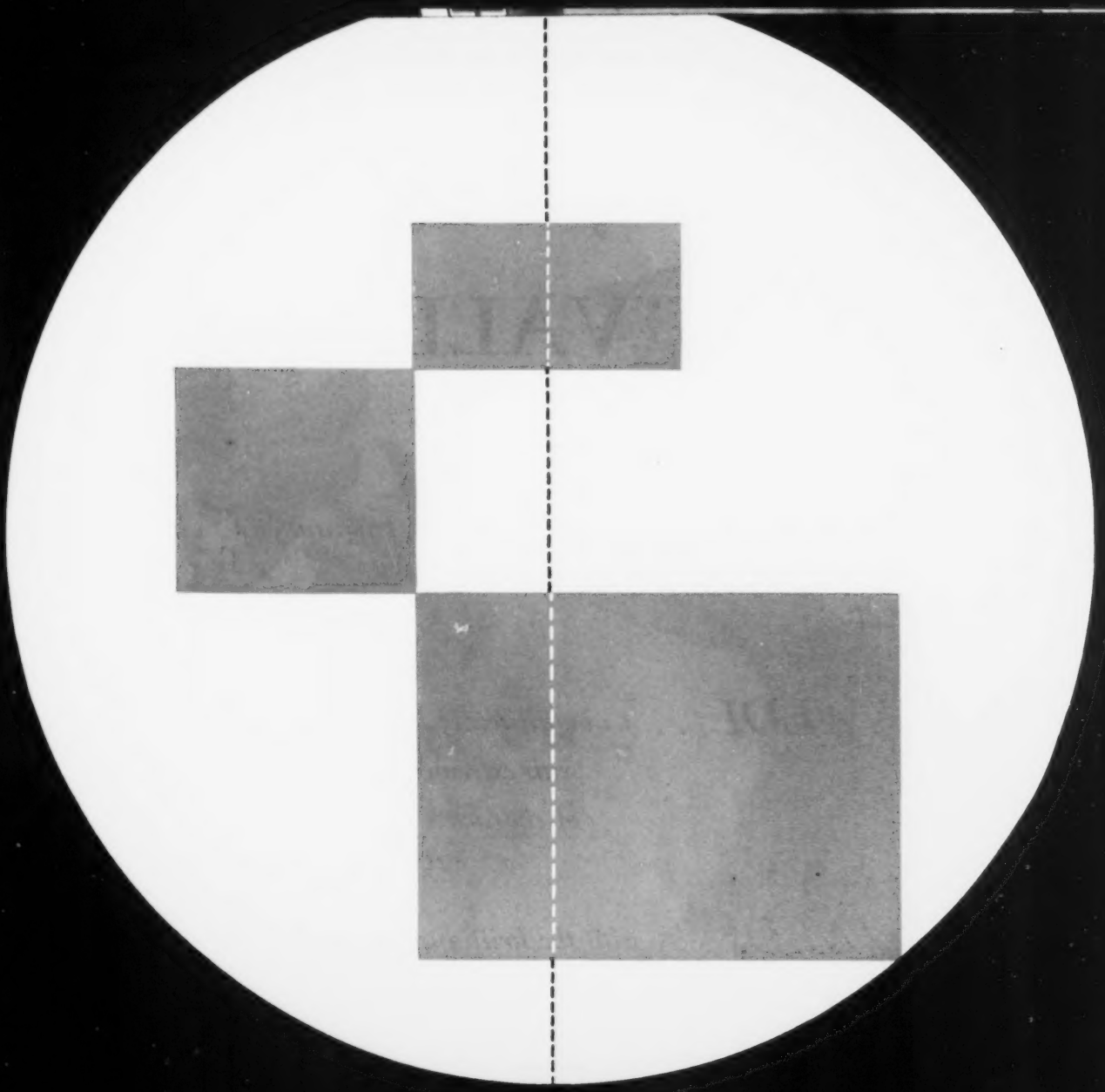

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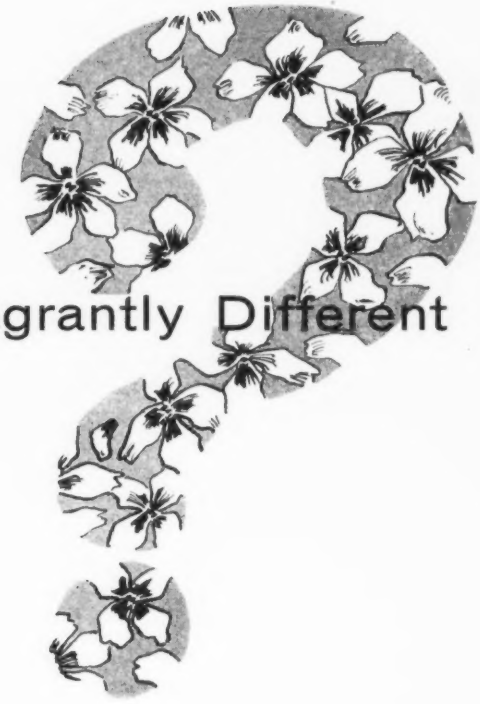

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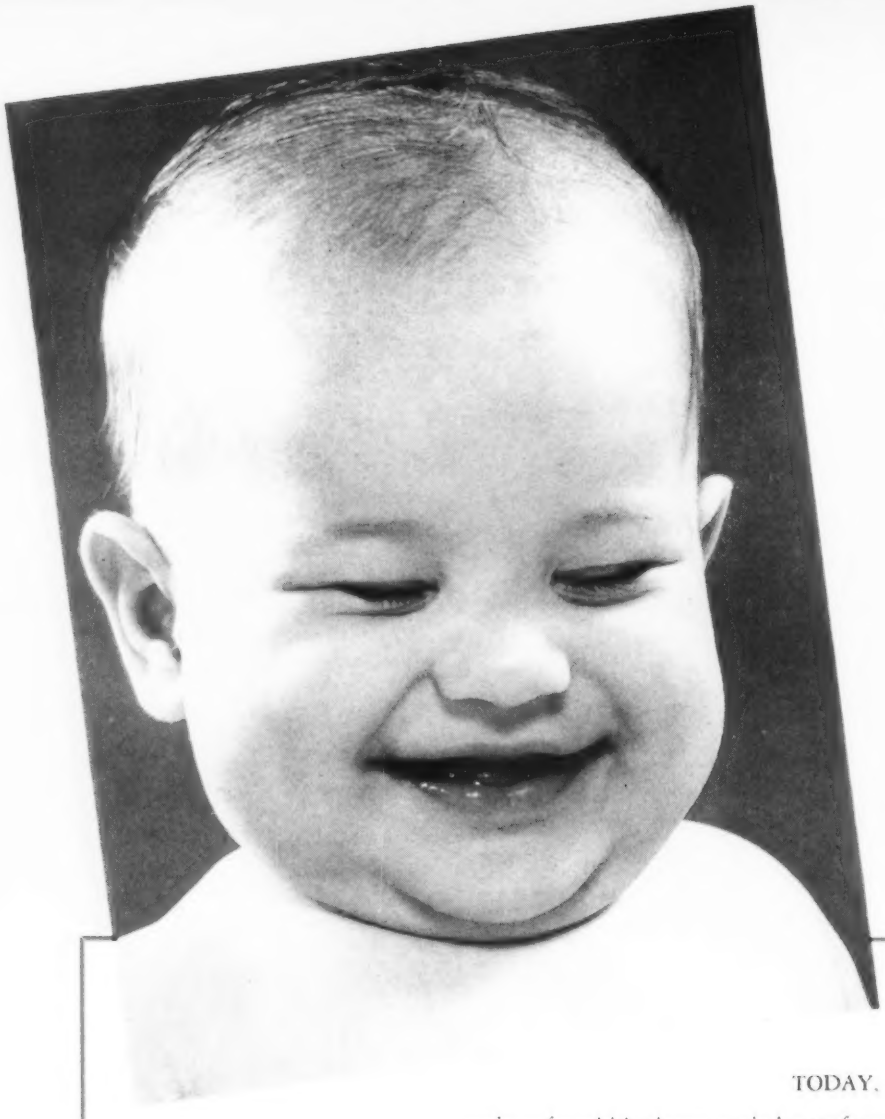

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I-Quiz

This Month's Quiz Master

Dr. W. D. Kumler

Professor of Chemistry, University of California, School of Pharmacy

QUESTION I. *Must a sun screen be in the form of a continuous film to be effective?*

ANSWER: An effective sun screen must present a continuous shield so that light will fall on molecules of the absorbing compound before it reaches the skin. The shield is usually made continuous by incorporating the compound in a cream or lotion which forms a film in which the absorbing compound is soluble. If the compound is a high-boiling liquid or waxy solid it may form a film itself but this usually requires more of the compound for film formation than is needed for the protective absorption of light. A continuous shield may possibly be formed by having insoluble crystals or small particles of the absorbing compound evenly dispersed throughout a medium. This method is very sensitive to the way the product is prepared and applied and is dependent on the size, shape, and distribution of the particles. While effective preparation of this type have been made they contain a high percentage (15%) of the absorbing compound and formulations by different people may give different results.

QUESTION II. *Can the ultraviolet spectrophotometer give readings that are directly translatable to human use when it comes to testing sun screen preparations?*

ANSWER: Yes, providing necessary precautions are observed, namely:

1. That comparable absorbing layers be measured in the spectrophotometer as are applied to the skin, or that appropriate readily calculable corrections be made.
2. That the compound be formulated so as to give a continuous shield.
3. That the compound not be rapidly decomposed by sunlight. This can itself be tested by irradiation and spectroscopic examination.
4. That the compound is not altered by reacting with substances associated with its presence on the skin.
5. That solvent shifts of the spectrum which are usually small be further minimized by dissolving the compound in a solvent for spectrographic measurement that is similar to that in which it is incorporated in the film, such as ethanol, if cetyl alcohol is the film forming compound.
6. That the compound is a true sun screen which functions directly by absorbing the 290-320 mu rays and does not have to first react chemically with the skin.

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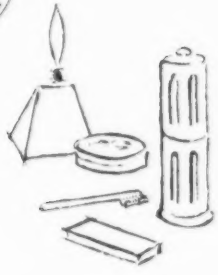

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The firm of Fray Grins no longer bought from the best houses. Then they no longer bought from any house—they went out of business. And the sparkling jewels and the rare editions were sold to the highest bidders.

• • •

If there be a moral to this tale we would conclude that it is "Shortcut in Quality is False Economy"... Yet we would be bold to say that at Syntomatic we feel there is a practical parallel in combining top quality with true economy. Prove it? Our pleasure . . . Syntomatic Corporation, 114 East 32nd Street, New York 16, New York. MUrray Hill 3-7618.

TECHNICAL abstracts...

The Germicidal Action on Human Skin of Soap Containing Tetramethylthiuram Disulfide. Rudolf L. Baer and Stanley A. Rosenthal (New York Univ. Postgraduate Med. School, New York N.Y.). J. Invest. Dermatol. *23*, 193-211 (1954).—Soap contg. 1% tetramethylthiuram disulfide (TMTD) produced after 1-week use a reduction in transient and resident bacterial population of the hands. The germicidal activity persisted for at least 2 days after cessation of use. Continued use for 2 weeks caused no further reduction in bacterial counts. A soap contg. 2% hexachlorophene was less effective. Skin microorganisms did not develop increased resistance after the soap had been used daily for one or more weeks. The soap was well tolerated by 301 of 309 patients suffering from a variety of dermatoses, including allergic and eczematous dermatoses; the undesirable reactions could, however, in all but one case be attributed to the soap rather than to the TMTD. Patch tests for allergic sensitization to TMTD on 214 subjects were neg. in all but one case. *Thru C.A. 50, 10986g*

Hygienic Evaluation of Products for the Tinting of Eyebrows and Eyelashes Based on the use of p-Phenylenediamine Salicylate. Ewa Sikorska. Roczniki Panstwowego Zakladu Hig. *6*, 223-8(1955) (English summary).—*p*-Phenylenediamine and *p*-toluidinediamine are prohibited in Poland as hair staining components of cosmetics because of their skin-irritating and toxic properties. A deriv. of one of these compds., *p*phenyldiamine, was selected for cosmetic use, and was evaluated chemically and biologically for its suitability. The mol. ratio of base to acid radicals of the compd. is 1:1. Rutter's chromatographic method was used for the sepn. of both components after appropriate chem. treatment. A detailed description of the analytical methods is given. In the case of rabbits, Limbeck's method was used to det. the effect of the compd. upon the blood and blood cells. No harmful effects were found with *p*-phenylenediamine in tests on humans. *Thru C.A. 50, 10989d*

The Influence of Oil-in-Water Emulsions on the Hydration of Keratin. J. B. Shelmire, Jr. J. Invest. Dermatol. *26*, 105-9(1956).—Thin sheets of callus tissue were dried to brittleness and coated with an emulsion film by dipping and draining; various oils, emulsifiers, and adjuvants were employed in different proportions. At 40° and at a relative humidity below 55% water entered the callus through the semipermeable film, rendering it pliable. Full pliability was retained for 16 hrs. when the emulsion contained 20% mineral oil and 3% cetyl alc., emulsified with 2% Na laurylsulfate. Some emulsions allowed the material to dry to brittleness in 16 hrs. *Thru C.A. 50, 10824b*

Effects of Vitamin A Deficiency on Skin and Hair Growth in Mice. Lois A. Loewenthal (Univ. of Connecticut, Storrs). J. Morphol. *98*, 275-303(1956); cf. C.A. *49*, 4111f. C57 black mice, when placed on diets free of vitamin A, lost wt. and became severely ill when they were 70-90 days old. The food intake of the mice did not decrease during the expt. In control mice on a complete diet the hair-growth cycle was completed in 21 days, but the cycle often lasted 24 days in vitamin A-deficient mice. Histologically the skin of vitamin A-deficient mice was normal even though the rate of hair growth was retarded. The distribution of SH groups, glycogen, and metachromatic substances was not affected by the deficiency. The lack of vitamin A did not result in hyperkeratinization of the skin. *Thru C.A. 50, 10885i*

Cutaneous Hypersensitivity to Lanolin: Investigation of One Case. John Everall and E. V. Truter (Univ. Leeds, Engl.). J. Invest. Dermatol. 22, 493-6 (1954).—A subject was sensitive to certain lanolin alcs. but not to lanolin acids. The sensitizing substance was a yellow glassy solid of $[\alpha]_D = +25.0°$. Acetylation caused a loss of ability to produce a cutaneous reaction. *Thru C.A. 50, 10898g*

An Evaluation of Chemical Preservatives for Ophthalmic Solutions. C. A. Lawrence. J. Am. Pharm. Assn. *44*, 457 (1955).—Data are presented on the relative antimicrobial activities of seven commonly used chemical compounds that are used for preserving ophthalmic drug solutions from *Pseudomonas* and *Proteus* contaminations. In testing the compounds against 26 strains of *Pseudomonas aeruginosa* and four species of *Proteus* in a simple buffer solution, in the absence of an ophthalmic drug, the order of activity of the agents from high to low were found to follow the pattern: Benzalkonium chloride > phenylmercuric nitrate > phenol or chlorobutanol > parabens > thimerosal > phenylethyl alcohol. When the compounds were tested against some of the organisms in distilled water the order of activity from high to low was found to be as follows: Benzalkonium chloride > phenylmercuric nitrate > chlorobutanol > phenol or thimerosal > parabens > phenylethyl alcohol. When the preservatives were added to aqueous solutions of ophthalmic drugs experimentally contaminated with *Pseudomonas aeruginosa*, the order of activity of the compounds was: Benzalkonium chloride > chlorobutanol > phenol > parabens > phenylmercuric nitrate > phenylethyl alcohol or thimerosal. Several suggestions are given for the selection of a suitable preserving agent for ophthalmic drugs and certain procedures to be followed in the formulation of solutions under practical conditions in hospital and pharmacy routine.

Amino Acid Content of Sweat. B. S. Pankoff. Vestnik Venerol. i Dermatol. *1953*, No. 3, 18-19; Excerpta Med., Sect. II, *7*, 750(1954).—Using indicator paper, the following amino acids were identified in sweat: asparagine, glutamine, serine, threonine, alanine, valine, and methionine. Increase of aspartic acid favors the growth of pathogenic fungi. *Thru C.A. 49, 13415d*

Biochemical Studies on Melanin Formation in the Human Skin. K. Slotta, S. Bril, and L. Frankenthal. O Hospital (Rio de Janeiro) *43*, 523-35(1953); Excerpta Med., Sect. XIII, *8*, 3(1954).—Attempts to demonstrate a tyrosinase effect in human serum failed. Ultraviolet light, quinone compds., and Cu may replace tyrosinase. Nor was dopa oxidase demonstrable in serum or vesicular fluid. Substances inhibiting autoxidation 3-(3,4-dihydroxyphenyl)-alanine (dopa), however, were found. Dopa oxidase seems to be localized in the melanoblasts. *Thru C.A. 49, 13430b*

The Separation of Mineral Oil-Vegetable Oil Mixtures with Adsorption Columns. R. P. Harker (Wool Inds. Research Assoc., Leeds, Engl.). Chemistry & Industry *1955*, 592.—Emulsions contg. paraffin and olive oils stabilized with Lissapol N (nonionic) were adsorbed on 20 x 1 cm. columns of activated charcoal contg. 5% Bio-Deminrolit (mixed resin, 40 mesh). Elution with acetone-$CHCl_3$ gave 98-100% recovery without removing the detergent. For simple oil mixts., a soln. in 40-60° petr. ether was applied to an Al_2O_3 column and eluted with the petr. ether to give quant. removal of the paraffin oil. Subsequent acetone elution yielded olive-oil fractions. The sepn. was followed by detg. n and referring to a calibration curve of synthetic oil mixts., and by following the relative absorptions of the CH_2 and CO bands in the infrared region. *Thru C.A. 49, 13668i*

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Notes

One of these days, someone will be marketing a "throw-away," one use, toothbrush, the Yank being the kind of fellow he is . . . The Tributes to Perkin in U. S. journals is a token of the high regard for this great basic development that chemists have in all chemically related lines of endeavour, including cosmetics . . . Watch for oleyl alcohol to play a greater role in cosmetics than it has . . . The Sunkist people have published a valuable "Pectin Bibliography," free if you want it . . . Cosmetics are getting real scientific attention . . . The A.A.A.S. will have a section on the subject December 26 and the A.C.S. held a symposium on September 20 . . . Saw Max Factor's new laboratories, air conditioned, too . . . They are truly a place to work . . . The A.D.A. has just reported on a study of children's teeth in an area where water is fluoridated . . . Did it ever go through your mind that nonionics sometimes behave like cationics, which may explain some things? . . . After hearing Mary Jakovic's paper on pigment dispersion in lipstick at the T.G.A. Scientific Section meeting, a number of people in the halls later commented "there's nothing new there." Well, maybe there isn't but she at least put it on paper for one and all to know—and we need more of this in the cosmetic industry. Personally, I thought it was a good paper . . . After excoriating others on poor slides, deNavarre shows up at the Society of Cosmetic Chemists' meeting with one of the poorest sets of slides ever shown at a scientific meeting . . . Having just mentioned lipsticks above reminds me that Yeager's ultrasonic suggestions might be used to de-aerate or de-gas pigment dispersions in lipstick . . . The Canadian T.G.M.A. had a fine meeting on December 14th. While I missed some of the morning stuff which was well received, the balance of the program was educational . . . Adalene Johnston (Beauty Counselors of Canada, Ltd.) was made T.G.M.A.'s "Queen of Toiletries of 1956," as gracious a queen as ever there ever was . . .

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Probably no one single item captured a market as did PVP for hair sprays. This department has steadfastly claimed the stickiness resulting from inherent hygroscopicity would kick back, and it now seems to have happened.

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This material can be used to replace PVP in hair sprays lock, stock and barrel, and it is further claimed to be a better product as a result of the change.

Controlling Emulsion Viscosity

Wool wax alcohols, a fraction of lanolin, has many interesting uses besides being an emulsifier. Jack Pickthall, erudite British perfumer and emulsion expert, tells me that he uses it to control liquid emulsion viscosity. Whereas, cetyl alcohol tends to give thick or viscous emulsion, wool wax alcohols tend to prevent thixotropy resulting in a "thinner" emulsion, when it replaces part of the cetyl alcohol.

Cetyl Alcohol-Lanolin Antagonism

In experiments reported by Arbussa (C.A., *50*, 8140, 1956), using mixtures of lanolin, wool alcohols, petrolatum and cetyl alcohol, the author obtained maximum stability from mixtures made without cetyl alcohol. An antagonism between cetyl alcohol and lanolin is believed to be present.

This raises a whole series of questions because cetyl alcohol has been considered an auxiliary emulsifier to lanolin and its derivatives. Furthermore wool alcohols probably contain some inherent cetyl alcohol which makes one wonder all

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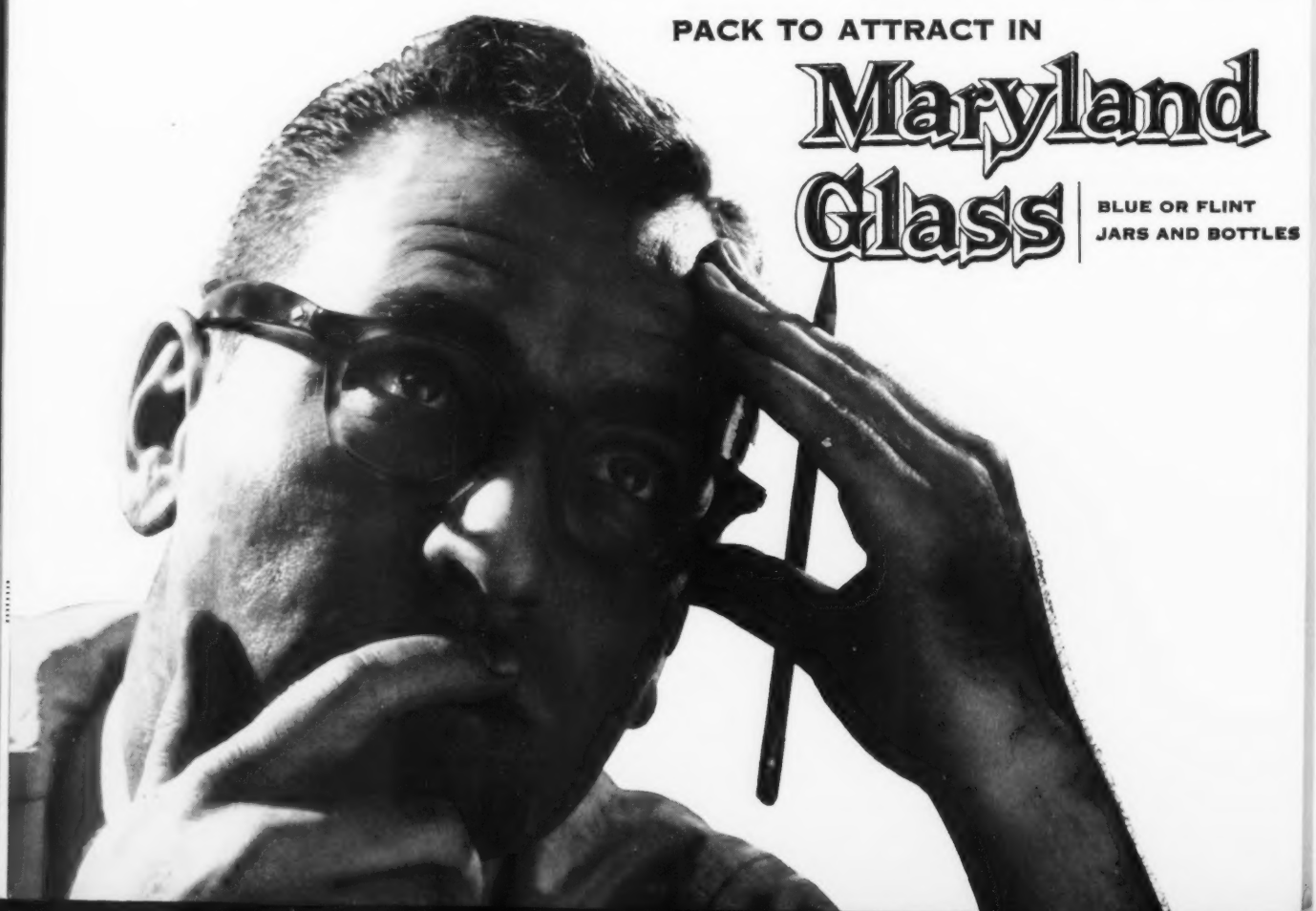

the more about this reported antagonism.

Arbussa's reported findings are a bit confusing, unless the printer has erred and the proofreaders failed to catch the mistake. For his maximum uptake of water by the different bases is greatest when cetyl alcohol, wool wax alcohols and petrolatum are used together. In fact this mixture absorbs three times as much water as an identical mixture of wool wax alcohols and petrolatum.

Can anyone throw any light on this?

FDA Opportunities

Chief Chemist Fredrick Garfield of the Bureau of Field Administration of the Department of Health, Education and Welfare in Washington, says there are positions available in the 16 field laboratories of F.D.A. for recent chemist graduates and for chemists with experience in developing methods of examination for products coming within purview of the F.D.A. If interested contact Personnel Officer, U. S. Food and Drug Administration, Department of Health, Education and Welfare, Washington 25, D. C.

Sales of Cosmetics

The total value of all shipments of toilet preparations by manufacturers, including interplant transfers, in 1954 was $744,481,000. The number of establishments making toilet preparations was 710. These are the figures given in the latest report of the U. S. Census Bureau. The total value of all shipments of essential oils, including interplant transfers, was $25,911,000 in 1954. Citrus oils accounted for $8,758,000; peppermint oils, $5,860,000 and other natural essential oils, $10,430,000.

In 1947, the last year that the census was taken total, shipments of toilet preparations by manufacturers, including interplant transfers, was $465,544,000 and of essential oils $27,314,000.

In 1954 there were 588 establishments that shipped flavoring products valued at $446,000,000. Manufacturers covered included those classified in other industries.

Flavoring extracts, emulsions and other liquid flavors accounted for $65,000,000; beverage bases, $38,000,000; other flavoring agents except chocolate, $159,000,000 of which $67,000,000 was accounted for by flavoring syrups.

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QUESTIONS & ANSWERS

1220: HAIR POMADE

Q. *In a past issue of the* AMERICAN PERFUMER *you carried a formula for a waterproofing hair pomade. We are very interested in making a product for the Negro trade and would appreciate any information you have that would enable us to accomplish this goal. N. B. P., South Africa.*

A. We are not certain just what you have in mind referring to a waterproofing hair pomade for the Negro trade. Both General Electric Co. and the Dow Corning Co. supply silicone fluids that can be used in cosmetic preparations. If the pomade is intended to be a hair dressing, then you can use a formula like the following:

(A). Petrolatum, 6%; Mineral Oil, 37.5%; Lanolin 3%; Beeswax, 8%; Arlacel 83, 3%; Arlacel 20, 1%; Tween 20, 2%; General Electric Silicone Fluid SF-96 (1000 centistokes), 1%. (B). Borax, 0.5%; Water, 38%; Preservative, q.s. (C). Perfume, q.s. Preparation: Heat A to 70° C., and B to 75° C. Add B to A slowly with agitation. Perfume at 45° C., and stir until the emulsion reaches room temperature.

The Arlacels and Tween are supplied by the Atlas Powder Co. The Silicone Fluid can be obtained from the Dow Corning Co., or the General Electric Co., Silicone Division.

1221: COLOR RESTORER

Q. *We would be very much obliged if you could help us by suggesting a formula for a liquid hair cream to restore grey, faded or streaked hair to its original color for three or four weeks. S. F. Y., Australia.*

A. Let us tell you that there is no such thing that can *restore* the color to any grey or faded hair. Anything that puts color on hair is a hair dye no matter how you want to call it. A common "restorer" is based on lead and sulfur. You can start with an emulsion, fluid or solid, nonionic or faintly on the acid side, which contains from 1 to 5 per cent of colloidal sulfur along with 1 to 5 per cent of lead acetate, usually with at least 5 per cent of a polyol such as glycerine or propylene glycol. This material is combed through the hair, which gradually gets darker in color assuming the final color of lead sulfide which is a brownish-black shade. This is a common type of so-called "restorer."

1222: PINK CHLOROPHYLL

Q. *I wish to know more about pink chlorophyll for my present study. Would you kindly inform me whether I could get a sample? In addition I shall be very happy if you could tell me the estimated price of pink chlorophyll. H. T. C., Japan.*

A. The pink chlorophyll which we have in our possession was made in 1952 and was manufactured by the Rhodyll Chemical Company, 475 Fifth Avenue, New York 17, New York. However, letters addressed to them are returned by the Post Office marked, "Moved. Whereabouts Unknown."

1223: SODIUM ZIRCONIUM LACTATE

Q. *Where may I purchase sodium zirconium lactate or other zirconium salts for use in stick deodorant? How much is used? Do you have a formula? W. L. C., Louisiana.*

A. Sodium zirconium lactate may be purchased from the Titanium Alloy Mfg. Division of the National Lead Co. and the Titanium Zirconium Co., Inc. It takes from 5 to 15 per cent of sodium zirconyl lactate (100% material) to be effective, depending on the product. In this connection we call your attention to the recent Patent No. 2,732,327 on the use of this material in an antiperspirant stick. Have you ever thought of using the potassium salt instead of sodium?

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Around Europe in 30 Days

DENMARK: Maison G. de Navarre discussing the affiliation of the Dansk Kosmetik-Kemisk Selskab and the Society of Cosmetic Chemists with the Danish society's officers, O. Petrosch (treasurer), E. Thomsen (secretary) and C. Steffenson (president).

Maison G. deNavarre

Makes the Grand Cosmetological Tour

MAISON G. deNAVARRE

WHEN my wife and I left Idlewild Airport in New York on Pan American Flight 42, Friday, October 5th, we didn't dream of the experiences awaiting us in Europe, nor the good luck to follow us almost all the way. Our first break came with a tail wind bringing us in three hours ahead of schedule.

In London we were greeted with a myriad of flowers from various well-wishers. Our first visitors were the gracious and cordial John Cliffords with whom we spent much time in England. John is Beauty Counselors' managing director in London. We dined with them at Simpson's that first night. Later the Cliffords took us to Windsor Castle, Petworth House and two "pubs" in small country towns. (A pub is a public house. In the country they usually have lodging to let for transients. Many are several hundred years old, as the ones we visited.)

Obliging Ralph Harry and his wife came to the Park Lane from Heston, Middlesex. They were a lot of fun. That night, textile fiber scientist, Dr. L. Peters of Leeds and Miss Sheridan joined us for dinner. Our ebullient quatralogue caused our guests to miss a symphony concert they planned to attend.

While I made two visits to Gosnell's in Lewes, Pat Clifford and wife, Jeanette covered the shops. (A shipload, held up by the dock strike, just cleared customs.) The roots of the Gosnell firm go back to 1677. The Warners, Reggie and Leslie, the first of whom runs Gosnell, while Leslie operates Coultard and Warner (dealers in basic perfumery materials and perfume compounds) are a warm and ingratiating brother team. Reggie is the "politician"; Leslie the "gourmet," with a keen auxilliary business sense. (The frost in southern France didn't touch his neroli in the winter of 1955-56.)

The Jack Pickthalls took us to dinner at the Ivy (a place specializing in French cuisine). Jack is a teetotaler. For such a man he is a savant of French wines. Complementing this, Jack has a bottomless bag of stories. One would like to make a tape recording of an exchange of *mots pour rire* between Dan Dahle and Jack.

At this point it should be mentioned that I went to Europe for the following purposes:

1. To call on Beauty Counselors of London, Ltd. (My parent company is Beauty Counselors, Inc., U.S.A.)

2. Attend a special council meeting of the British Society of Cosmetic Chemists.

FRANCE: Dr. S. Sabetay, Madame Schmuck, Louis Schmuck, Secretary Société Française de Cosmétologie and Paris director of Ets. Gattefossé, Mrs. deNavarre, and Maison deNavarre at the Gattefossé establishment at Puteaux-sur-Seine.

FRANCE: Dining at Camille Renault's restaurant in Puteaux, J. Quigg, Madame Schmuck, J. Morelle, L. Schmuck, Dr. J. Sfiras, Madame duCluzel, P. Velon.

3. To meet and get acquainted with Fred Wells.

4. Await the arrival of the Jack Quiggs from Toronto.

5. Attend a special bureau and general meeting of the Société Française de Cosmétologie.

6. To tell Dr. Sabastien that *Tout le Cosmétique Américain* ain't passé.

7. Find the pigs in Pigalle.

8. Learn what attracts the Muus Beetses to the Black Sheep in Amsterdam.

9. Meet the officers of the Danish Society of Cosmetic Chemists.

10. Outright purchase of the Den Kongelige Porcelains Fabrik (makers of Royal Copenhagen porcelain).

11. Meet and dine with the Doctors Wolff and Neugebauer at Karlsruhe and Baden-Baden.

12. Clean out the shops on the Ponte Vecchio in Florence.

13. Catch cold on the ice-box Italian trains.

14. Have an audience with the Pope at Castel Gondolfo.

15. Watch Churchill paint on the French Riviera.

16. Go to Grasse.

17. Call (?) on Grace Kelly at Monte Carlo.

18. See if the Swiss Alps are higher than the American Rockies.

19. Meet the Swiss group headed by Kurt Pfeiffer who are about to form a Swiss Society of Cosmetic Chemists.

20. See André Firmenich and André Givaudan.

21. Check on the prices at Shannon "free port," and get some real Irish soil for an Irish-Canadian brother-in-law.

22. See how it feels to be awake for 25 consecutive hours of flying.

23. See why *einfart, poussez* and related terms confused Frank Chilson when he was in Europe.

24. Make a payment on the deNavarre version of the Marshall Plan.

25. See if it is possible to spend five weeks abroad with your wife and come back home with your shirt on.

This was an ambitious program, but I did almost everything I set out to do. However, my shirt is a bit ragged at the moment.

British Society of Cosmetic Chemists

The special meeting of the Society's Council arranged so I could attend while in England on October 10th. The Honorable Secretary F. Riley drove me to the meeting from the Park Lane. Jack Pickthall presided, in the absence of President R. T. Dobson, with whom I had lunch in New York during the Society of Cosmetic Chemists' Seminar, prior to my trip to Europe. In addition to the men mentioned there were H. J. Lovell, H. W. Hibbott, H. Holmes, K. G. Johnson, A. W. Middleton, W. B. Mitchell, W. W. Myddleton and A. W. G. English. They were a friendly group indeed. After discussions on the Journal, the Council invited me to dinner at Simpson's, then to help them close a pub in the Shell-Max area. Who said the English people are cold and stuffy? Not this gang! In fact, it wasn't just Jack Pickthall who told the stories. This man Riley is no slouch. So I told my own story of the meaning of the French phrase, "*savoir faire.*"

One of my purposes for being in England was to meet and get acquainted with Fred Wells. This I did; Freddy, you know, is the eminent editor of our British contemporary, *Soap, Perfumery and Cosmetics.* We have been writing to each other for about twenty years. His British accent is different—and so is he. While our ages are not too far apart, he has more hair than I do—he speaks better French, too! Our first meeting was at the offices of Marchon Products from whence he and I went to Isow's in Soho for lunch. The place reminded me a bit of Toots Shor's. It just reeks with celebrities of one kind or another. Of course, being with Freddy is in itself *nulli secundus.* Besides being an erudite editor, Freddy is a man of taste for food and the fermented juice of both grain and grape. If it wasn't for the fact that I was to do a stint for John Clifford's Beauty Counselors (some 350 and several beauty editors) at Caxton Hall, we would still be trying to settle something or other.

After Caxton Hall and the subsequent cocktail party given by Colonel Max Spicer (Sales Manager of Beauty Counselors of London, Ltd.) for some 25 or 30 of the top echelon, again met Freddy Wells and back to Isow's to a little dinner party with Baron Langley of Bush and Harry Polkinhorne of Yardley. Here we talked of many things cultural, philosophical, political and religious. We were so engrossed with this that we almost missed talking about the women of different countries.

GERMANY: Maison deNavarre and Dr. H. Neugebauer in Baden-Baden.

FRANCE: At the meeting fo the Société Française de Cosmétologie in the Maison de la Chimie, Maison deNavarre, M. Gattefossé, F. V. Wells and R. Colson.

On Wednesday, October 10th, the Jack Quiggs arrived on schedule via TCA. The only time we saw each other to amount to anything was at breakfast after which Jack and I went on our separate ways to work and the ladies to shop and "see" London.

John Clifford obligingly drove me out to Dr. H. W. Hibbot's laboratory and plant at Amersham to see some equipment in action. While in Amersham we met Mr. Collins of Gala. Along with some interesting sherry, we had a pleasant chat.

My time in London was coming to a quick close. My main regret was that I didn't get to talk to or see Frank and Paddy Atkins. Perfumer-photographer-mountain climber Poucher was in a hospital, but we had a chance to talk on the telephone. Got to see or talk to 'most everyone else.

On Saturday, October 13th, BEA Flight 327 took us to Paris. At Le Bourget Airport we found waiting Messieurs Sabetay and Schmuck who greeted us with a beautiful bouquet of roses from the Société Française de Cosmétologie for Madame. Dr. Sabetay drove us to the Scribe Hotel via the boulevards exterieurs, entering Paris by the Avenue de la Grand Armée, the Champs-Elysées, Rond Point and the Place de la Concorde. We felt like celebrities.

That night, we dined at the Relais Bisson, somewhere near or in the Latin Quarter. The Quiggs who were with us, are practically *French* Canadians. They kept a lively conversation going with Dr. Sabetay while my own chatter usually had to be translated by Madame Rillon whom Dr. Sabetay brought along for just this reason. The Relais Bisson is not just a bistro but a very swanky spot catering to a discriminating clientele. In fact, all our European hosts are beyond compare. Their choice of food and drink was incomparable.

Sunday, we went to Versailles. The weather was just right. Unfortunately, it was UNESCO week and the place was crawling with thousands of people. The French government is repairing the accrued damages over the years, so certain portions of the palace were not open. It is a treasure spot indeed.

M. H. Pierantoni interviewed me on Monday morning. We exchanged many data on cosmetics and beauty culture.

A boat ride on the Seine took us past the original Statue of Liberty after which the French patterned our own. We saw Notre Dame and the Tour Eiffel.

On Tuesday Dr. Sabetay drove us to the home of the Schmucks in suburban Paris for a cocktail party prior to a lunch with the members of the Bureau of the Société Française de Cosmétologie. M. Schmuck is the secrétaire général de la Société Française de Cosmétologie. It was at his home the Société was conceived in 1949.

Personalities at this party were the following: M. and Mme. Schmuck, Mr. and Mrs. Quigg, M. Gattefossé, M. Meunier (Parfums Monteil), M. Velon (Lancôme), M. Colson (Consortium de Produits Chimiques et de Synthese), M. Alquier (Guerlain), M. Morelle (consultant), M. Bourdet (Prod'Hyg), Dr. Renaud (consultant), Madame du Cluzel (Colorants Wackher), Mademoiselle G. Marsac (Piver), Dr. J. Sfiras (Rouré-Bertrand), M. Florent (Sté. S.E.P.), M. Luzuy (President Tribunal de Commerce), Dr. Sabetay (*Industries de la Parfumerie*), Mr. F. V. Wells (*Soap, Perfumery and Cosmetics*), M. Claude (*Revue Jeunesse et Beaute*) and the deNavarres.

This was truly an event. Pictures were flashed continuously, a few of which accompany this story. Here were personalities of France, England, Canada and the United States, almost like a "summit conference."

After cocktails we went to lunch at Camille Renault's in Puteaux. M. Renault *est un "mecaenas"* for futuristic painters. This was the first time I tasted hare and finished off with a steaming souffle for dessert. There were toasts and much merriment. It was a great and happy occasion for us.

On the way back to Paris, Jean Morelle drove us to Malmaison where with Freddy Wells we talked of closer association between the S.F.C. and the S.C.C.

A fast dinner and on to the Maison de la Chimie for the evening general meeting. Met Givaudan's Reidwig of the Paris office after not seeing him for several years.

I am not accustomed to the hours of the S.F.C. meetings. They start their meetings at nine o'clock in the evening. In these days of my waning years, I like to retire somewhere around ten-thirty. As a result, the first paper was just finishing about the time I ordinarily call it quits. The second paper had yet to come.

We were extremely pleased to be at this meeting with Freddy Wells who was invited by the S.F.C. to sit at the rostrum with M. Colson, President Gattefossé and my-

HOLLAND: At Schipol airport in Amsterdam: Dr. J. G. M. Beets, Mrs. Beets, Mrs. deNavarre, Maison deNavarre, and Jack Pickthall.

GERMANY: Karl Rothemann and Maison deNavarre discuss Herr Rothemann's new book in Baden-Baden.

self. It is hoped that the results of these two meetings with the French will bring the Société Française de Cosmétologie and the Society of Cosmetic Chemists closer together so that their work can be for mutual advantage.

No trip to Paris is complete without a visit to one of its many places of entertainment and since our time was so short, all we could do was to go to the place that had four available seats. As a result, we ended up one night in the Casino de Paris where the three hour show was quite different from any show I have ever seen, and I like to think of myself as having been around. Among the other exciting things we did in Paris was to visit Pigalle. That's a spot! The TWA brochure describing this section of Paris certainly puts you on your guard. The places of "entertainment" in Pigalle that charge you $15 for a bottle of champagne whether you want it or not, must get a special vintage. The years and the brands are all the best but the stuff inside the bottle is not champagne. I suppose you don't notice it when you are watching the floor show.

Toured to Argenteuil and back to Paris. Met Louis Amic who drove me back to the Scribe. Next day looked at the newest Citröen cars—they have some ideas that are most unusual. Checked prices of various food and clothing. How does the common man make out with the high prices? Only wine seemed cheap in price, yet wages sounded low to me.

From Paris we went to Amsterdam via SAS and the prettiest natural blond stewardess I have ever seen. We were met by the Dr. M. G. J. Beetses and the Pickthalls at Schipal Airport. A quick visit to the Zaandam plant of Polak and Schwarz's Essencefabrieken, before it closed, showed us one of the most progressive aromatic chemical houses in the world and one of the largest laboratories working on aerosols. Holland is a most interesting country, one that will give us many pleasant recollections over the years. The food is excellent, the portions are tremendous, the friendliness is not surpassable and the House of the Black Sheep is an eating place the like of which I don't believe I have visited in Continental Europe. The following day Dr. R. Heilingötter and has wife joined the Beetses, the Pickthalls, the Quiggs and us for a late Sunday afternoon dinner because the Quiggs and the Pickthalls were both going back to London by an early evening plane. It was an intimate party which gave me a chance to discuss Dr. Heilingotter's own specialty, namely, permanent waving and hair dyeing, for a while. An unexpected finale to our dinner was a style show in the hotel lobby where Jack Pickthall's son won a prize.

Our next stop was Denmark. At the Copenhagen airport we were met by the three top men in the Danish Society of Cosmetic Chemists, namely, Messrs. Petresch, Thomson and Steffensen. They presented my wife with a beautiful orchid immediately on arrival; she was pleased no end.

Dinner that night was at the Petresch home with the two gentlemen previously mentioned, along with their wives. It was a memorable occasion. Getting to the Petresch home, one crosses the main street in Copenhagen which I believe is named after Hans Christian Andersen. At the hour we crossed there were only 50 million bicycles on the way home. Never, absolutely never have I seen so many moving bicycles at one time.

Dinner at the Petreschs' was *en famille*. After the amenities and the meeting of the Petresch children, we sat down to a little specialty the recipe for which Mrs. Petresch shanghaied from Alfredo's in Rome. Incidentally, the Beetses in Holland and the Petreschs are both exceedingly fond of Italy. This Alfredo specialty, if I can describe it properly is a pork tenderloin with a slice of bacon, I believe, over which is poured a Parmegana cheese sauce and the whole business is baked in the oven. It is most toothsome.

The next day we tried to balance the Danish budget by buying out the porcelain ware at the famous Royal Copenhagen shop, which material, by the way, took two months to arrive. There were not enough trucks around to bring it all at one time, so it had to come piecemeal.

Stephen Arctander, roving perfumer, just back from a solo safari throughout Africa, driving all the way, stopped in for a drink at the hotel on his way home. He recounted a number of unusual incidents. Hope to be seeing him in the States again soon.

A final dinner at the Europa with the husbands and wives with whom we had dined the night before, and

FRANCE: E. Bourdet, president elect of the Société Française de Cosmétologie, and R. Alquier

SWITZERLAND: In Geneva, discussing possible formation of a Swiss Society of Cosmetic Chemists. Standing, Paul Desbaumes, Kurt Pfeiffer, F. Riondel. Seated, Dr. A. Barbier, Mr. and Mrs. deNavarre, Dr. R. Brun.

they in turn saw us off at the airport for Frankfurt the next day.

Unfortunately, we didn't land at Frankfurt, and instead came down in Stuttgart because of bad weather at Frankfurt. This kind of mixed up our traveling schedule a bit but eventually we ended up at the Bellevue Hotel in Baden-Baden where I met Dr. W. Wolff, one of the owners of Kaloderma, a famous German soap and cosmetic manufacturing company.

I have to repeat again that all our European friends knew the best places to eat and just how to most enjoy the food. Dr. Wolff was no exception. In fact, following his special recipe for eating, both my wife and I ate twice as large a dinner as we ordinarily do and actually enjoyed it.

An unexpected visitor was Karl Rothemann, in from Innsbruck, Austria with an associate. The time was so limited we did little more than exchange salutations and discuss Rothemann's new book, which I recently reviewed. We gulped our continental breakfasts so as not to keep Dr. Neugebauer waiting.

The next day, Dr. Herbert Neugebauer, whom I had met a year ago when he was in the States, showed us the plant and their modern research laboratory on the outskirts of Baden-Baden. There is a setting for research, believe me. A spotless laboratory and excellent library, on a hillside in the Black Forest. What a view, all day long.

A trip through the Black Forest that day, a quick inspection of the casino and a savory luncheon at the top of one of the mountains in a little eating place, brightened the day in spite of the fact that it was heavily overcast and drizzling.

On our way back from the Kaloderma plant in Karlsruhe, we stopped at the Hotel Erbprinz in Ettlingen, just off the Autobahn, where I had my first taste of German beer. It is all it is said to be. At dinner we had some Rhine wine, and finished off with crepes Suzette. Dr. Wolff's car took us to Frankfurt where we took LAI to Milano and a train into Florence. I don't care what anybody tells me about European day trains; I would rather fly. European first class day trains are for the birds. They are ice boxes. Depots in Italy are not announced in advance. Even so, we arrived in Florence in the rain putting up at the Excelsior where we finally thawed out. Here we had our first touch of Italian food in Italy, and it was exciting.

After buying half the jewelry and leather goods of Florence the following day, a quick sightseeing trip and visit to the museum, we went on our way to Rome. In Rome's Excelsior Hotel awaiting us was a letter from Dr. Emma Fenaroli, well-known contemporary editor and publisher of the *Rivista Italiana Essenze, Profumi, Piante Officinali, Olii Vegetali, Saponi.* There also was a letter from the Comitato Italiano Di Estetica E Cosmetologia, and a bouquet of beautiful roses from them.

We did the usual amount of sightseeing in Rome. Dinner one night with Mimi Hartman of the U. S. Embassy, a friend of my secretary. On another night was a short visit with two Italian gentlemen, one of whom was Dr. Fenaroli's nephew. Dr. Fenaroli was recuperating from a heart attack and unable to come to Rome. We finished off our trip in Rome with two dinners on two different nights at each of the two Alfredo's, and frankly, I can't tell the difference between the Fettuccini made at the one place and that at the other. I think they are both good. Both serve fine Bordolino and Volpollicella. Both use a gold spoon and fork in mixing the noodles and cheese. Naturally, all good Catholics when in Rome should have an audience with the Pope. We were fortunate enough to have one at Castel Gondolfo. This was one of the highlights of our trip in Europe.

Met Dr. Mario Gezzi, technical service man for Montecatini in Rome and explained problems in getting data on their products. He promised to try to help me. (A letter just in, from the main office in Milan tells me they don't think it necessary to send any information.)

We were disappointed to be unable to take advantage of the invitation of the Comitato Italiano di Estetica e Cosmetologia to attend a special meeting they were holding in my honor in Milan. We didn't know about this until our arrival in Rome. My plans could not be changed. Furthermore, both my wife and I had picked up bad colds coming down on the trains from Milan to Florence and from Florence to Rome. As I mentioned before, these trains were ice cold. An exchange of letters, telegrams and telephone calls only confused mat-

(CONTINUED ON PAGE 52)

President George G. Kolar presents the prized S. C. C. medal for outstanding achievement to Miss Florence Wall

S.C.C. Honors Woman Scientist

Miss Florence Wall first of her sex to receive its coveted medal

. . . Officers for 1957 installed by President George G. Kolar

THE coveted medal award of the Society of Cosmetic Chemists was awarded at the annual meeting December 13 to Miss Florence E. Wall, author, consulting chemist, lecturer and educator in recognition of her outstanding contributions to the industry. Miss Wall was the first woman to be accorded this honor. The presentation was made at the conclusion of the annual banquet following brief talks by Miss Hazel Kozlay, an editor, who described Miss Wall's contributions in the cosmetic field and Dr. Marston L. Hamlin of American Home Products Co., who related Miss Wall's career. The presentation was made by President George G. Kolar and after the applause had subsided Miss Wall graciously accepted the medal. Stephen L. Mayham, executive vice president of the Toilet Goods Assn. was toastmaster. Following the presentation the balance of the evening was devoted to dancing and the renewal of friendships. A feature of the festivities were the tributes of Miss Arlene Dahl, film star, who praised the industry's scientists for putting beauty within the reach of every American woman; and Warren Hull, TV star who presented Miss Wall on his national TV show "Strike It Rich," December 17.

Prior to the dinner dance the members listened to seven technical papers of pertinent interest. After the morning session the luncheon was held when the new officers were installed by President George Kolar, who gave a summary of the activities of the Society under his leadership in the past year.

The first officer to be installed was Sabbat J. Strianse who is the president of the Society for 1957. In his acceptance speech Mr. Strianse paid tribute to the officers who in the past have built up the Society to its present international scope; and pledged his utmost efforts to carry on in the same spirit. A hearty round of applause greeted the new president at the conclusion of his address.

Four well known research chemists snapped during a moment of serious discussion: Lester Conrad, Sabbat Strianse, president for 1957, Gabriel Barnett, skilled director of the S.C.C. Symposium, and Richard Sommers

One of the many gay groups at the dinner dance: Mr. and Mrs. Howard Isermann, Miss Joan Isermann, John Jones and Mrs. Samuel Isermann who enjoys the meetings of the S. C. C.

President George G. Kolar congratulates James H. Baker, financial genius who won acclaim for his success in raising funds for the annual S.C.C. Special Award since it was established.

Some of the speakers photographed with the chairman: Charles L. Teitelbaum, William Markland, Morris J. Root, William R. Prindle and Ross Whitman who rendered yeoman service as program chairman

President-elect for 1957 is James H. Baker, a charter member of the Society. He will assume the presidency in 1958. Secretary Robert A. Kramer and Treasurer Dr. Walter A. Taylor were unaminously re-elected. Directors Gabriel Barnett and Savery F. Coneybear were re-elected for second terms. Retiring President George G. Kolar joined the Executive Committee which includes former presidents Dr. Kenneth L. Russell, Dr. Donald H. Powers, Dr. Paul G. I. Lauffer and Dr. Sol D. Gershon.

Excellent publicity was provided for the meeting by Savery F. Coneybear and the social arrangements were well planned by Walter Wynne who is largely responsible for the way they were so satisfactorily carried out.

Technical papers read at the meeting were:

"New Developments in Glass Containers" by Dr. William R. Prindle, Hazel-Atlas Glass Co.; "Chemical Applications for Ultrasonic Waves" by Prof. E. B. Yeager of Western Reserve University; "Cosmetic Knowledge Through Instrumental Techniques" by Dr. Everett G. McDonough, Dr. A. M. Mackay and Dr. Murray Berdick; "Gas Chromatographic Analysis of Aerosol Products" by M. J. Root and M. J. Maury; "The Electron Microscope—A Tool for the Study of Hair Fibers," by Dr. W. L. Courchene, Procter & Gamble Co.; "The Interference of Nonionic Emulsifiers with Preservatives III" by Maison G. deNavarre and Harold Bailey; and "Gas Partition Chromatography—Application to Essential Oils and Other Volatile Materials" by Dr. Charles L. Teitelbaum, Battelle Memorial Institute. Abstracts of some of the papers follow.

Gas Chromatographic Analysis of Aerosol Products

THE analysis of the liquefied gases and solvents present in "aerosol" products offers unusual difficulties when

Dr. Paul G. I. Lauffer, one of the speakers at the recent Symposium on Cosmetics under the auspices of the American Medical Assn., chats with Mrs. Goulden and Harold Goulden, T.G.A. Scientific Director

Dr. Donald A. Mackay, Dr. W. L. Courchene and Dr. Ernest B. Yeager query Maison G. deNavarre about the scientific progress of the cosmetic industry in European countries he recently visited

S.C.C. Meeting

A group of Cosmetic Career Women pay tribute to the medalist at the reception: Miss Sunie Brown, Miss Mildred Blum, Miss Margaret Burrow, Miss Kay Fitzpatrick, Miss Irene Subtelny, Miss Kay Colton and Medalist Miss Florence Wall

This party of merrymakers at the reception was made up of Mr. and Mrs. Arthur Cohane, Mr. and Mrs. Herbert Linne, Dr. and Mrs. Julius Wetterhahn and Mr. and Mrs. Maurice Rosenthal

Good fellowship marked the gathering at the reception of Mr. and Mrs. Vincent Defeo, Mr. and Mrs. Robert Heidt, Mr. and Mrs. Oscar Sumner, Mr. and Mrs. Theodore Waugh, Mr. and Mrs. Paul Sperry, Mrs. Terry Lamb, Mrs. Ruth Kitchen, Mrs. Mysie Emmett, Miss Gertrude Freeze, Patrick Morone and Dr. Herbert Sommer

As usual the spontaneous good humor of Pierre Bouillette added to the enjoyment of the group composed of Mr. and Mrs. E. Sturman, Mr. and Mrs. W. Silkin and Mr. and Mrs. Pierre Bouillette

Dr. Victor Fourman and Dr. Julius Wetterhahn congratulate the energetic publicity chairman, Savery Coneybear for attracting the large attendance to the meeting and to the dinner-dance. Herbert Linne and Samuel Prussan approve

John Cassullo, executive par excellence and Dr. Ernest Guenther, scientist par excellence find themselves surrounded by beauty and talent at the reception: Dr. Charles L. Teitelbaum, Mr. and Mrs. Pierre Bouillette, Dr. and Mrs. Herbert Sommers and Mr. and Mrs. Peter Niles

Two charter members, both former presidents and both medalists, M. G. deNavarre and Dr. Emil Klarmann have a friendly chat at the reception. With them are Mrs. Klarmann, Mrs. deNavarre and Mr. and Mrs. A. S. Bedell

Enjoying the after-dinner speeches at the dinner dance are Mr. and Mrs. Raymond Reed, Robert E. Horsey and Mrs. Pierre Bouillette. All were impressed with the growth of the S.C.C.

Speakers at the morning session discuss the papers they presented at a breakfast gathering: Maison G. deNavarre, Dr. Ernest Yeager, Dr. Donald A. M. Mackay and Dr. W. L. Courchene

Though it rains—as it did on the night of the dinner-dance—it's always fair weather when good friends get together such as Mr. and Mrs. Martin Rieger, Miss Jane Viola, Mr. and Mrs. Mitchel Miller, Mr. and Mrs. Harry Isacoff, Mr. and Mrs. Warren Dennis and Mr. and Mrs. Michael Stanton

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Challenging scientific problems were completely laid aside by the group composed of Mr. and Mrs. S. J. Elmi, Mr. and Mrs. James Russo, Constantin Zannis and Mr. and Mrs. Murray Wiener

approached by conventional procedures. Although the fluorinated hydrocarbon mixtures have been commonly analyzed by a number of methods including mass spectrometry, infrared spectrophotometry, liquid density measurements and vapor pressure measurements, the presence of other volatile components makes such procedures of little value.

Gas-liquid partition chromatography provides an easy, rapid and particularly suited technique for the analysis of the mixtures of liquefied gases and low boiling liquids that are found in "aerosol" products. This method, first used by James and Martin in 1951 for analysis of fatty acids, can be used in many ways in the "aerosol" industry:

1. Analysis of propellent mixtures, both the chlorofluorinated hydrocarbons and the hydrocarbons.
2. Quality control of "aerosol" products.
3. Analysis of both liquid and gaseous phases of "aerosol" products.
4. Determination of air in liquid and gaseous phases.
5. Determination of trace amounts of propellents in the atmosphere.

The essential components of gas-liquid partition chromotography instruments are the following:

1. Carrier Gas
2. Flow Controller
3. Sample Inlet
   Gas
   Liquid

Richard Malmstrom delights Henry Eickmeyer and Stephen Capkovitz immensely when he relates an amusing incident that took place during his recent western trip to Las Vegas

It was definitely informal gaiety at the reception table of Mr. and Mrs. Richard Sommer, Mr. and Mrs. Edward Sagarin, Mr. and Mrs. Gabriel Barnett and Mr. and Mrs. Sabbat Strianse

4. Chromatographic Column
   a. Solid Phase (Carrier)
   b. Liquid Phase
5. Detector
6. Recorder

Special techniques must be developed for the introduction of the "aerosol" sample. Such samples can be introduced into the column as either a liquid or a gas. The liquid sample required is only from .005 to .05 cc. and the gas sample is from 1 to 25 cc. The sample must pass through the chromatographic column as a gas.—*Abstract of S.C.C. paper by M. J. Root and M. J. Maury.*

The Interference of Nonionic Emulsifiers with Preservatives, III

PREVIOUS publications by the authors have established the interference of certain nonionic emulsifiers with some common preservatives.

The present report covers the various factors tested to determine the specificity of the interference. It includes a very comprehensive list of nonionics as well as preservatives. Among the preservatives tried are the *p*-hydroxybenzoates; usnic, sorbic, benzoic, and dehydracetic acids; several antibiotics and new potential preservatives.—*Abstract of S.C.C. paper by M. G. deNavarre and Harold E. Bailey.*

Irving Colbert, Harry Isacoff, Vincent Defeo, Irving Schlakman and James Lamb, committee chairmen of the New York Chapter, with Chairman Warren B. Dennis and former chairman Michael Stanton

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New Scientific Developments Outlined

On the dais (left to right): E. P. Morrish, Dr. F. J. Austin, Honorary Chairman of the Section; H. D. Goulden, Scientific Director of the T.G.A.; Pierre Harang, President of T.G.A.; Orville Davenport, Chairman of the Section; Dr. Emil J. Klarmann, Vice-Chairman of the Section; Alice Jakovics; Donald H. Kirby; Joseph Kalish; E. G. Helton.

Scientific Section of the Toilet Goods Assn. hears and discusses six papers by experts on newer ways of improving various cosmetics

A SPLENDID program of scientific papers, an attentive and interested audience of cosmetic chemists and a luncheon where every available seat was taken, combined to make the semi-annual meeting of the Scientific Section of the Toilet Goods Assn. one of the most interesting meetings ever held by it. The meeting was held in the spacious Sert Room of the Waldorf Astoria hotel, New York, December 12; but it was evident from the popularity of the semi-annual meetings of the Section that that location may not be continued as the capacity crowd taxed its facilities to the limit.

Honorary chairman Dr. F. J. Austin was present as usual and the meetings were conducted under the direction of Chairman Orville Davenport and Vice Chairman Dr. Emil G. Klarmann. Details of the meeting were handled with his usual efficiency by Harold D. Goulden, secretary and director of the section.

The papers presented were:

"Zirconium Oxychloride—a New Ingredient for Antiperspirants" by E. G. Helton, E. W. Daley and J. C. Ervin of the Proctor & Gamble Co.

"A Method for Determining the Waving Efficiency of Cold Permanent Wave Lotions" by Donald H. Kirby, John H. Breck, Inc.

"Dermatological Evaluation of Perfumes of Low Sensitizing Index" by Dr. Raymond A. Osbourn, Georgetown University Medical Center; Dr. Thomas W. Tusing, Hazelton Laboratories; Dr. Francis P. Coombs and Edward P. Morrish, Firmenich Inc.

"A Discussion of the Functions of a Cosmetic Research Department," by Dr. Joseph Kalish.

"Dispersion of Pigments in Lipstick," by Mary Jakovics, Avon Products of Canada Ltd.

"Application of Gas Chromatography to Toilet Goods Analysis," by Nathaniel Brenner.

Abstracts of some of the papers follow:

Zirconium Oxychloride—a New Ingredient for Antiperspirants

ZIRCONIUM Oxychloride is a new commercial chemical contributing good anti-perspirant properties to a properly buffered deodorant cream. Used in combination with aluminum chlorhydroxide, it has been shown to be more effective for a larger percentage of people than conventional creams or solutions. Two types of tests have shown its efficacy. One of these involved the application of the cream on the backs of subjects and measuring the amount of perspiration by use of an indicating cream. In the other test, the cream was applied to the axilla in a standardized manner and the amount of perspiration measured by weighing pads placed under the arms.

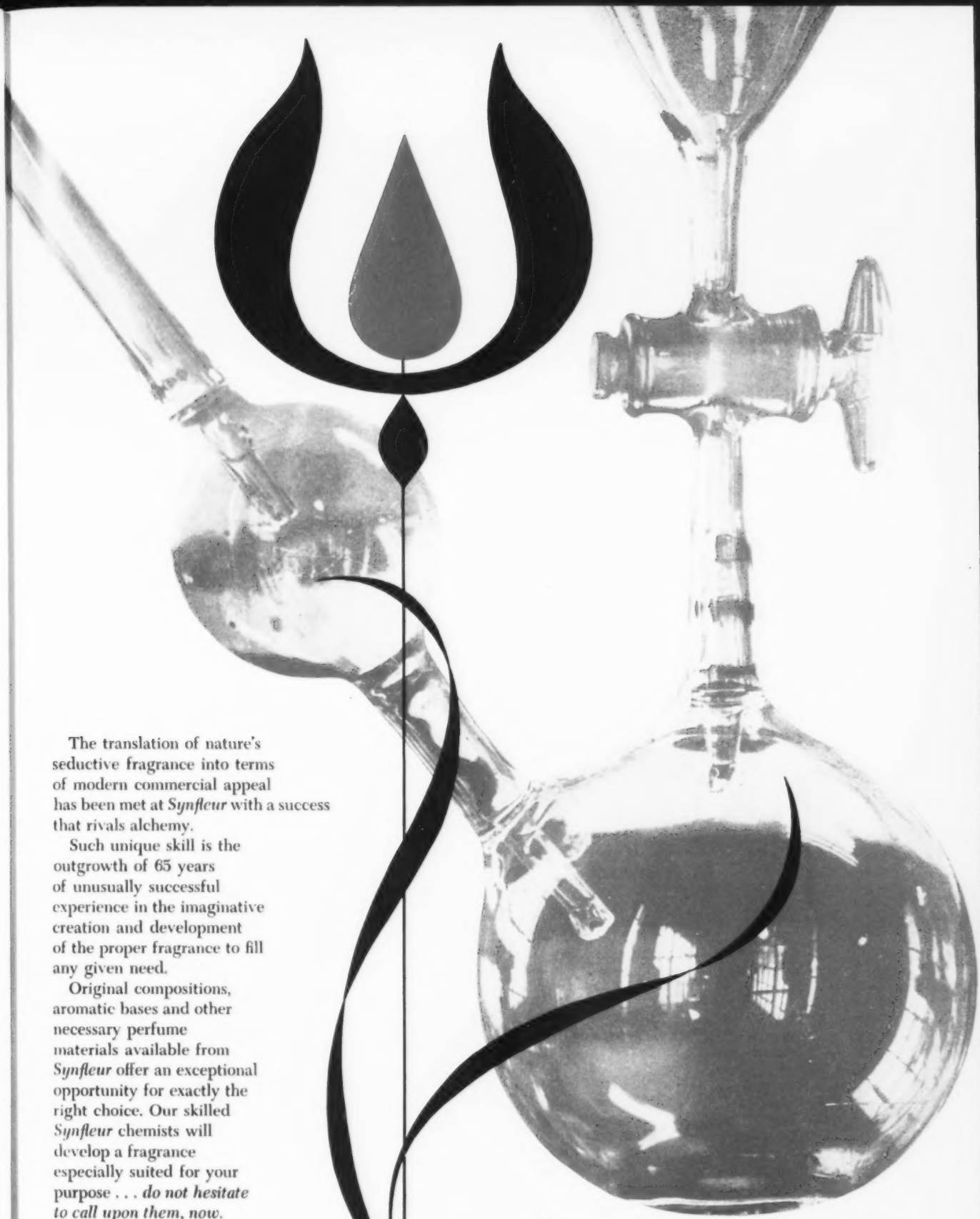
Other investigators have shown that zirconium oxychloride has a very low order of toxicity. The present work with the buffered cream combination discussed above confirms this information and extends it to include data concerning eye irritation, percutaneous effects, and human patch testing. The cream is shown to be safe for use as an antiperspirant and essentially non-irritating after repeated application of closed patches. Consumer-use tests over a period of six months to a year have also established its safety.—*Abstract of T.G.A. paper by E. G. Helton, E. W. Daley and J. C. Ervin.*

A Method for Determining the Waving Efficiency of Cold Permanent Wave Lotions

FOR many years in our laboratory we attempted to evaluate permanent wave lotions utilizing known laboratory techniques patterned after procedures used in the beauty salon. One method was to wind hair on a regular waving rod, process, neutralize, dry and then measure the curl produced. This method proved difficult due to the winding procedure, variables in waving lotion strength while the lotion was on the hair, difficulty in measurement of the curl, and nonuniformity of the curl.

The method as described in this paper consists of winding hair on a pegboard and allowing to process in a closed container for a specific period of time. At the end of the waving time the hair is neutralized, taken from the pegboard and placed in a pan containing approximately three inches of water. The curl is measured while in the water with the results obtained in centimeters. This measurement is applied in a formula giving a result in percent waving efficiency. The method is repeated at several different waving time intervals, and from the results obtained can be plotted on graph paper forming a curve.

In this paper several different waving lotions of known thioglycolic acid and free ammonia content are tested and curves drawn. One of the lotions tested contains monoethanolamine thioglycollate.—*Abstract of T.G.A. paper by Donald H. Kirby.*



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(Continued from page 43)

ters. Dr. Paolo Rovesti failed to get my reply in time; otherwise, we would have met in Rome. It was quite a mixup, a forerunner of later confusion in Nice.

From Rome to Nice via Air France and then to Cannes where we put up at the Miramar, one of the very few hotels still open. Winston Churchill had left a few days before because of chilly weather. Dined with Francois Amic at the Hotel de Paris in Monte Carlo, visited the Casino and called (?) on Princess Grace Kelly about midnight. The castle has a pretty setting overlooking the sea.

Next day, M. Amic drove us to Grasse where we saw the Roure-Bertrand floral and natural products plant. Their chief perfumer, Jean Carles, pictured at his perfumery organ in the October 13th *Saturday Evening Post*, but erroneously entitled Maurice Coeur, showed us around. The floral season had ended, of course. Orris and oakmoss were being extracted and plant equipment modernized or replaced for the next season.

After lunching at the Moulin Vieux, a further discussion with perfumer Coeur, then more sightseeing and picture taking in the mountains and dinner with Francois Amic with a final glass of champagne at his villa.

Prior to leaving the next day, talked on the 'phone with M. Santaloni of Charabot and M. Maisondieu of Chiris. Time did not permit a further visit to Grasse and so on our way via Swissair to Geneva.

Kurt Pfeiffer (Tokalon) met us at the airport and drove us to the Beau Rivage where we were staying over the week end.

Here we met Dr. A. Barbier, Dr. R. Brun, M. Paul Desbaumes and M. F. Riondel, who are the core of the Swiss Society of Cosmetic Chemists just being formed.

Kurt Pfeiffer, attentive and gracious host, drove us on Sunday to Lausanne on Lake Geneva. On the way we dined in a very picturesque chalet nestled in the Alps, with a sea of terraces of grapevines on all sides.

That night we met the Auguste Baumeisters at their villa in Conches-Geneva. We had a spirited chit-chat. (The very athletic and handsome Mr. Baumeister is probably on his way to an African safari at this writing.) They are a warm and amiable couple.

On Monday while Mrs. deNavarre was shopping for Swiss sports sweaters for our children, I visited the Givaudan plant at Vernier-Geneva, nestled in a terraced grape growing mountainside. Here, again, met Dr. Barbier who introduced me to plant superintendent Dr. de Waldkirch. Andre Givaudan was in the U. S. I was most fascinated by the molecular distillation of Deltyl though their other specialties such as Laurine were interesting, too. Met soft-voiced, scholar of organic perfumery chemistry, Dr. Yves Naves and saw his modern laboratories.

Kurt Pfeiffer picked me up for the trip to Firmenich where I met Andre Firmenich again. He hadn't changed since our last visit years ago. Here was a different kind of perfume chemical manufacture and blending than at Givaudan. Saw Cyclosia and Exaltolide being processed among other things. The newer sections of the plants being built have a ⅔ dome shaped roof and ceiling with windows at the end of the arc. Andre Firmenich drove me back to the Beau Rivage in his Alfa Romeo sedan. (Incidentally, it was the Firmenich villa that was turned over to President Eisenhower when the Summit Conference was held in Geneva, I am told.)

A final luncheon with Kurt Pfeiffer, who asked Dr. Barbier and Dr. de Waldkirch to join us. More "natural" Swiss wines, finishing off with raspberries and whipped cream. Then to the airport where Kurt Pfeiffer loaded us down with gifts and a cordial *bon voyage*.

Twenty-three hours later via Swissair, stopping at Frankfurt, Shannon, Gander, then New York with a plane full of passengers, we arrived in New York's Idlewild airport right on the dot. Slowly through customs, by helicopter to LaGuardia Airport, then after two hours, finally home.

We had done almost everything we wanted to do. I met practically everyone I had hoped to meet. There were almost no hitches in travel plans made long before by American Express and going through seven countries beside Ireland, Canada and the United States coming or going.

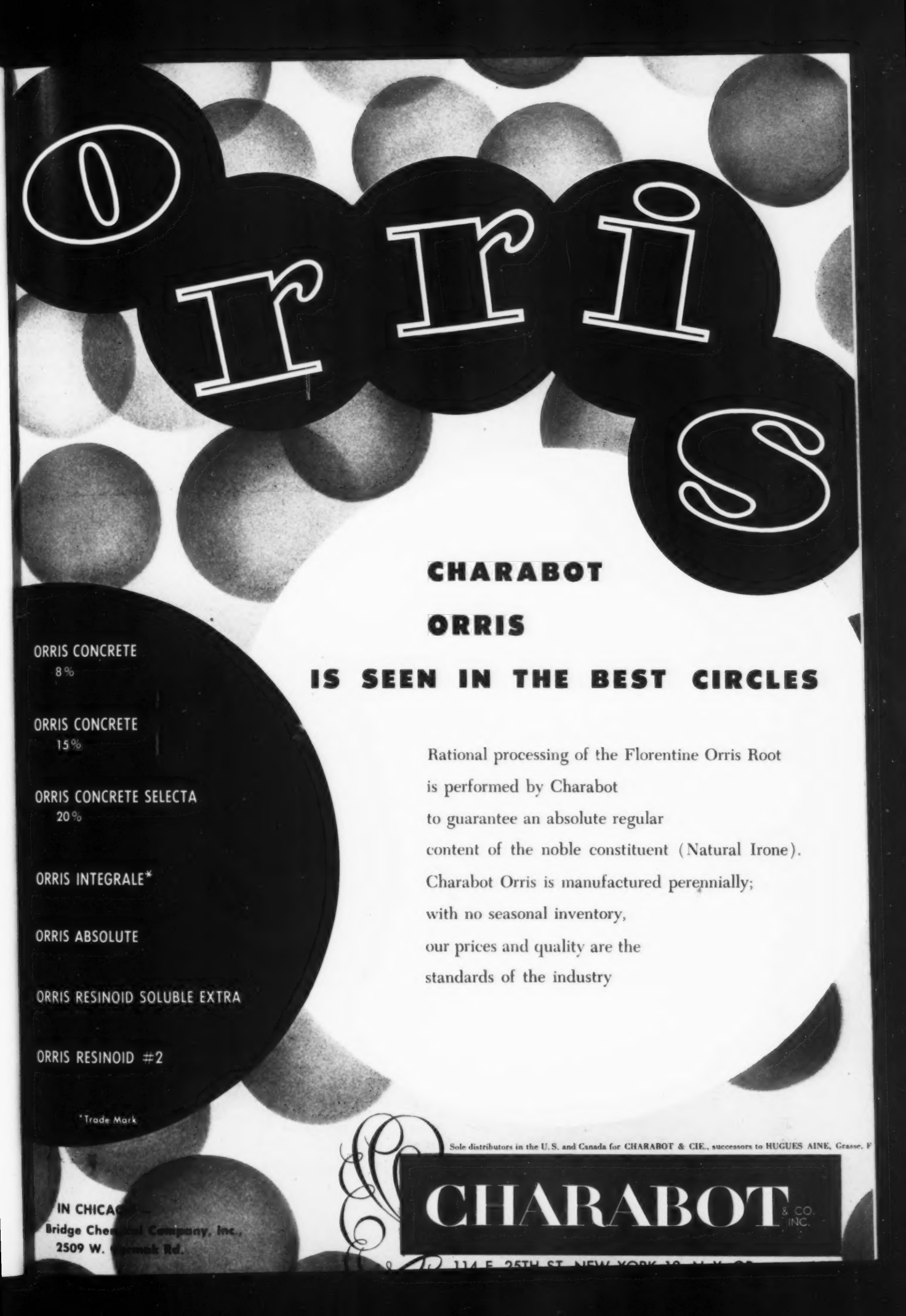
Our feeling about the Europeans that we met is that they are friendly, attentive, gracious and hospitable. They work and live under less pressure than we. Television is just now invading their lives. Individuality seems more a part of their being than ours. Peace—they want, but they wonder if we want it as fervently as they. The American passion for uniformity is touching Europeans in some countries.

As for the countries *per se*, most war scars are gone. One senses a return, for the most part, to the "old times." Taxes are helping German business but seem to be stifling everything from England on into Continental Europe. Businessmen are running into all kinds of competition requiring a reappraisal of all methods in production and selling. The younger generation, many of whom were in the last war, are, like the Yankee, showing suspicion of the doctrine of pricelessness due to age alone. Competition is attacking the old way of life. The still newer generation holds old traditions suspect, and is impatient to do a better job than their elders. If we are in a dilemma as to how to have peace, then our allies in Europe are, too. Each country sees the problem in a different light.

But let it be said that Europeans don't intend the United States to run off with the world's business. They are going to fight for their share. Part of this fight is in producing new and different products. Another part is a more aggressive, a more modern selling approach.

Are we glad to have been in Europe? Yes, we are, indeed! Many, yes, many thanks to the hosts of friends who made our trip so pleasant. We hope to reciprocate their hospitality when they visit the U. S.

"I'm like our aerosol containers. He just presses a button for me."



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A 1957 Guide to Aerosol Packaging

Introduction & General Aerosol Industry Notes
Robert A. Foresman, Jr.

•

Aerosol Economics
Harry E. Peterson

•

Aerosol Propellents
Winston H. Reed

•

Aerosol Formulations
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Glass & Plastic Containers
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Aerosols & Safety
H. R. Shepherd

•

Perfumers' Problems in the Manufacturing of Aerosols
Ernest Shiftan

Aerosols/1957

AEROSOLS—

Introduction and General Industry Notes

ROBERT A. FORESMAN, JR.*

AEROSOL packaging is a $250,000,000 per year fact and the general historical background has been so rehashed that it is not necessary to cover it again in this series of articles. The industries which may be interested, now ask "what can it do for us?" rather than, "what is it?"

It may be of interest to know that among the companies who are at present distributing aerosol perfumes or colognes the consensus of opinion seems to be that aerosol sales represent sales that would not be made otherwise. The degree to which this is true is certainly open to question, but it is a fact that this method of using aerosol fragrance contributes to the frequency of use—this is especially true when meter valves are used and the user feels that the matter of waste is under control.

All functional cosmetics, all room deodorant or air fresheners, practically all insecticides, many Christmas snows and a portion of all the other categories are perfumed in varying degrees. To some extent this aspect of aerosol perfumery offers more of a challenge and demands more of the perfumer than do the more classical uses of fragrance. When on an average the perfume ingredient of any of these types of aerosols will make up from .3% to 3% or more of the manufactured cost of the package, the dollar and cents value of the perfume business involved is worthwhile.

General Concepts

Aerosol packaging or more correctly pressure packaging takes in all of the products packed into a container with an internal pressurized atmosphere which serves the purpose of expelling the contents and usually, although not necessarily, changing their form to accomplish a predetermined purpose. Food and non-food foams, and air-borne and surface deposited spray of either liquid or powder are all properly classified as aerosols (commercial—not technical connotation) or pressure packaged products.

The pressurized internal atmosphere mentioned in the foregoing paragraph may be achieved in several ways. Details of the gases or propellents providing the atmosphere are the subject of a complete section in the following pages, but some concepts of the factors back of a choice of filling method for the liquefied gases may be worthwhile at this point. Much has been heard of pressure filling vs. cold filling. Assuming the same end product the "vs." is of concern only at the filling stage and primarily involves matters of production and quality control.

Cold filling is the process whereby the liquefied gases are chilled to the temperature of zero vapor pressure (their boiling point) or below and handled as liquids in the open atmosphere during the filling cycle. From a practical standpoint in most cases, the base concentrate must also be chilled.

Pressure filling is based on keeping the liquefied gases confined under pressure and handling them as liquids in closed systems at room temperature. Each has advantages and disadvantages.

A major advantage of cold filling is the fact that the propellent gas is introduced through the open top of the container thereby allowing the first "flash" vaporized propellent to displace the air in the container upwards and positively eliminate it. Cold filling is also the fastest way to introduce large volumes of propellent into the container. It cannot be used with water base or products where necessary cooling might damage the concentrate and it is not practical for very small percentages of propellent charge.

Pressure filling is attractive to two groups—those whose sense of energy economics is outraged at the thought of using external energy to first cool and then heat the propellent when only enough energy to overcome a pressure differential is all that should be required from a theoretical viewpoint.

The second group is primarily comprised of those looking for minimum investment equipment which, nevertheless, will have good utility from a production standpoint. Equipment maufacturers have concentrated on pressure filling in their efforts to produce low priced equipment. There is fair justification for this as the refrigeration equipment required for cold filling is for all intents and purposes over and above the basic equipment necessary for pressure filling.

The relative simplicity and low investment level are the major advantages of pressure filling. Disadvantages are: One—To avoid excess pressure due to air compression it is necessary that it be removed from the container, either by suction evacuation or purging with a small amount of propellent introduced before capping. This operation is a critical quality control matter. Two—reduced speed of filling for most equipment in present use since the propellent is forced in through the dispensing valve after the container is closed. This introduces another problem—the necessity for using only valves that have good backward flow characteristics, which of course reduces the flexibility of valve choice. Maximum output per filling head is approximately 30 units per minute under optimum conditions. Recently there have been introduced "under the valve" pressure fillers which eliminate most of the disadvantages to the method and it is possible that major increases in high speed, positive quality, pressure filling installations will follow rapidly.

In addition to filling equipment, the availability of

* Aerosol Consultant.

laboratory facilities for development, testing and routine quality control should be considered.

"Climbing Aboard"

As in any new venture, the simplest way to get into the aerosol business is usually the best. There is available a voluminous literature covering all details of the industry free for the asking from the major component and ingredient suppliers. In addition, every contract loader stands ready to help with competent advice and there are independent consulting firms specializing in the field if that approach seems desirable.

One digression before we continue on how to start with aerosols. Quality is necessary at every step without compromise. The reasons are threefold: First—the existing industry has voluntarily and independently achieved and sustains standards of quality that the public recognizes and demands. The time is past when a poor product can be forgiven because of inherent lacks in the process or be automatically considered an industry wide problem. Now such a product will simple die a competitive death. Two—lack of quality at any point can result in total chemical failure of the packages at some stage in distribution thereby removing them from ever being exposed to consumer choice. Three—because of the nature of the packages they are subject to compliance with regulations of a considerable number of government agencies at all levels. Lowered quality in manufacturing processes may result in packages which do not comply with the necessary regulations and are therefore unsaleable.

Regardless of whether or not a company intends ultimately to install filling equipment, the only economically acceptable approach to entering the aerosol distribution or merchandising field is to have initial production packages filled by a contract loader. This serves the purpose of providing real market facts in place of guesses and allows a full factual analysis of the entire operation at leisure and without harassment by production and distribution considerations, or worry over the balance sheet on a capital investment installation. The larger the operation the more important this concept becomes since the investment necessary to meet projected high production schedules can be disastrous if sales at the projected level fail to materialize.

Frequently the relationships between a distributor and a contract loader will develop mutual advantages during this initial stage which emphasize the desirability of continuing the arrangement regardless of earlier plans.

Initial production is frequently desired in relatively small quantities. Contract loaders naturally prefer at least one full days production run on one line, for any product, but increasing numbers of them are offering low runs on occasion simply as a service to their customers. Generally where this is the case, all components of the package will be available out of the loaders warehouse stock, unless special shapes (glass or plastic units) or special decorations (all types of units) are required, in which case the special items must be, of necessity, purchased by the customer.

When and if a contract loader is approached with a new product, he will probably insist on a period of testing which may cover up to three, perhaps more, months. Usually this suggestion is met with cries of anguish and the plea that "everybody is planning on it for the next sales meeting" and that "the national advertising is already in the mill and how important is the test period anyhow." The importance of such test procedures cannot be over emphasized and the more the contract loader insists, the more important it is that his advice be followed.

There is no such thing as an Aerosol Association for the simple reason that none has been needed nor is likely as things stand. The original producers and sellers of aerosols were concerned with insecticides, so this group whose association was the National Association of Insecticide and Disinfectant Manufacturers found themselves concerned with the problems incident to aerosols. As the problems were solved new members were acquired whose interest was entirely aerosols with insecticides a secondary consideration. In the course of time, the association became The Chemical Specialties Manufacturers Association (C.S.M.A.). Almost the entire body of aerosol activity now finds focus in the Association.

Throughout the articles that follow there are repeated references to the C.S.M.A. This is neither accidental nor promotion of the association—the articles were written independently but the C.S.M.A. is such a significant factor in the aerosol industry that it must enter almost any discussion of the subject. Anyone having an interest in aerosol packaging would be well advised to contact and join the C.S.M.A. Executive offices are located at 50 E. 41st St., New York, N. Y.

For a merchandiser, distributor, or manufacturer of aerosols, there are a number of municipal, state and federal agencies which are of concern from a regulatory standpoint. The following are a few extracted from the Table of Contents of the C.S.M.A. Manual "Agencies and Regulations of Interest to the Pressure Packaging Industry."

United States Department of Agriculture
- Entomology Research Branch
- Pesticide Regulation Section

City of Buffalo, Fire Department

City of Cleveland, Department of Public Health and Welfare

Federal Trade Commission Activities, U. S.

United States Food and Drug Administration

Interstate Commerce Commission, U. S.

City of New York—Fire Department
- Permits and Labeling
- Hair Lacquers Labeling
- Paint or Enamels Labeling

State of New York—Department of Health
- Warning Labels

City of New York, Department of Health
- Warning Labels

State of New Jersey, Department of Labor
- Warning Labels

State of Illinois, Industrial commission
- Warning Labels rules

State of California, Board of Pharmacy
- Poison Labels

United States Post Office Regulations
United States Public Health Service

The Interstate Commerce Commission (ICC) actually belongs in the above list, however, it was left out in favor of including the following Quick Reference Table which covers the tariff regulations in some detail.

The following reference tables are complete up to October 17, 1956. All paragraph references are from H. A. Campbell's Tariff No. 9, copies of which may be obtained from Bureau of Explosives, 30 Vesey St., New York 7, N. Y. (Tables courtesy Pennsylvania Salt Manufacturing Co.)

In addition to the Regulatory Agencies there are other areas in which specific compliance is desirable as a matter of practice and the absence of which may be costly or embarrassing or both, on occasion. This is the realm of Patent Right either publicly or privately held. Ordinarily royalty payments are the responsibility of the fillers who pass the charge on to their customer. However, the customer may not be protected in the event the filler fails to pay. Every contract filler is or should be aware of these patents and his obligations to his customer in relation to them. The following are three patent coverages which are significant from this standpoint.

Carter Products—Foam Shave Cream
Zonite Products Co.—Ultra Low Pressure Formulations for Colognes and Similar Products
Continental Filling—Artifical Snow Base Made of Resin Plus Higher Fatty Acids.

In addition, the United States Department of Agriculture still retains the right to license, free, the use of the Goodhue-Sullivan Patents as they apply to insecticides. There is no difficulty to this licensing procedure but it is wise to apply for its issuance if areosol insecticides are to be handled.

A final word of caution—the grave consequences if too little or no product liability insurance is carried should be appreciated by everyone concerned with aerosols. This is becoming easier to get every day, but it is still an excellent idea to be sure that the specific terms "aerosol loading or pressure packaging" appear in the body of the policy and further that the company with whom it is written has had experience in the field—otherwise the premiums may well be out of balance one way or the other to the detriment of the most effective coverage in either case. Individual product liability policies should be carried by everyone in the chain of manufacturing and distribution. Do not be misled into believing that coverage exists just because the filler carries a policy. This is true only to the extent of his policy, which may not allow allocation of protection to you at all, in the event both customer and filler are held liable to an extent equal to or greater than his coverage.

ICC REQUIREMENTS	TYPE OF CONTAINER AND MAXIMUM CAPACITY				
	Glass or plastic up to ½ pt. or 8 oz. by weight	Metal can up to 17.6 fl. oz.	Metal container up to 17.6 fl. oz.	Specification 2P Metal container	Metal cylinder
Dispensing Pressures	Not over 25 psig at 70°F. or 89 psig at 104°F. 73.300(a)		Above 25 psig at 70°F. but below 40 psig at 70°F. 73.306(d)(1)	Above 40 psig at 70°F. but below 60 psig at 70°F. 73.306(d)(2)	Above 60 psig at 70°F. or between 25 and 60 psig which DOES flash back or flame
ICC Definition	Pressurized flammable liquid 73.300(a)		Flammable Compressed Gas See paragraph 73.300(b)(2, 3, 4)		
Specific Limitations	Container must withstand a drop of 4 ft. onto solid concrete without shattering 73.118(d)	None	DOES NOT flash back to valve or sustain a flame at any valve opening. This limitation DOES NOT apply if valve is protected by a cap or device approved by the Bureau of Explosives and the product does not have a flash point under 20°F. when given Bureau of Explosives test for flammability. 73.306 Also liquid content must not completely fill container at 130°F. 73.306(d)(1)	No other limitations	Not of interest to aerosol trade, requires shipping cylinders rather than normal aerosol containers. Subject to 73.301
1. Packaging a. inner	Glass or plastic 73.118 (d)	Metal 73.142(a) (1, 2, 3)	Metal 7 73.306(d)(1)	Metal 2P Spec. 73.306 (d)(2) 73.308	
b. outer	Strong container 73.118 (d)	Wood or fiber 73.142 (a)(2, 3)	Wood or fiber 73.306 (d)(1)	Wood or fiber 73.306 (d)(2) 73.308(1)	
2. Labeling	None required	Red-73.402(a)(1) and 73.405	Red-73.408(a)(1) and 73.402(a)(4)	Red-73.408(a)(1) and 73.402(a)(4)	
3. Marking	None required	Name of contents 73.401	Name of contents 73.401	Name of contents 73.401 and marked as follows: "Inside containers comply with prescribed specifications" 73.306(d)(2)	
4. Testing	None required	Each and every completed container must be heated to 130° without evidence of leakage, distortion, or other defect. 73.142(a)(2, 3)	73.306(d)(1)	73.306(d)(2)	

ICC regulations pertaining to aerosols—flammable. See paragraphs 73.115 (b) (1, 2, 3) or 73.300 (b) (2, 3, 4) and non-poisonous. All tables compiled by the staff of Isotron Sales Service Laboratories, Pennsylvania Salt Manufacturing Co. (Copyright 1957 by David E. Tillotson and John Haslip.)

AEROSOL IMAGINATION · AEROSOL CREATION · AEROSOL REALIZATION

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INCORPORATED

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Aerosols/1957

ICC Requirements	TYPE OF CONTAINER AND MAXIMUM CAPACITY				
	Metal container up to 17.6 fl. oz. g'ass or plastic (size limited by structure)	Metal container up to 17.6 fl. oz.	Specification 2P metal container	Specification 2P metal container with safety device	Metal cylinder
Dispensing Pressure	Not over 25 ps'g at 70°F. or 80 psig at 70°F. 73.300(a)	Over 25 psig at 70°F. but under 40 psig at 70°F. 73.302(a)(3)	Over 40 psig at 70°F. but under 60 psig at 70°F. 73.306(b)(1)	Over 60 psig at 70°F. but under 70 psig at 70°F. 73.306(b)(2)	Above 70 psig at 70° F. unless noted in exceptions
ICC Definition	Pressurized liquid 73.300		Compressed Gas See paragraph 73.300(a)		
Specific Limitations	None	Liquid contents must not fill container at 130°F. 73.302(a)(3)	None	Safety device (such as fus'ble plug in container) approved by Bureau of Explosives	Not of interest to aerosol trade, requires shipping cylinders rather than normal aerosol containers
1. Packaging a. inner	None	Non-refillable metal container 73.302(a)(3)	Spec. 2P metal container 73.306(b)(1) and 73.88	Spec. 2P metal container with safety device 73.306(b)(2) and 73.88	
b. outer	None		Wood or fiber 73.306 (b)(1)	Wood or fiber 73.306 (b)(2)	
2. Labeling	None required	None required	Green-73.402(a)(5) and 73.408(a)(2)		
3. Marking	None required	None required except name of contents for water shipment 73.302 (a)	Name of contents-73.401 plus "Inside containers comply with prescribed specifications" 73.306(b) (1, 2)		
4. Testing	None required	Each and every container must be heated to 130° F without evidence of leakage, distortion, or other defect. 73.302(a)(3)	73.306(b)(1)	73.306(b)(2)	

ICC regulations pertaining to aerosols—non-flammable and non-poisonous. (Copyright 1957 by David S. Tillotson and John Haslip.)

ICC Requirements	TYPE OF CONTAINER AND MAXIMUM CAPACITY		
	Metal container up to 17.6 fl. oz.	Metal container up to 17.6 fl. oz.	Metal container up to 17.6 fl. oz.
Container content	Biological products or medical preparations which will be deteriorated by heat	Non-liquified compressed gases, plus non-poisonous and non-flammable contents	Foodstuffs or soaps with emulsified or soluble compressed gases
Dispensing Pressure	Not over 40 psig at 70°F. 73.302(a)(7)	Above 40 psig at 70°F. but not over 90 ps'g at 70°F. or 125 psig at 130°F. 73.302 (a)(9)	Not over 100 psig at 70°F. or 135 psig at 130°F. 73.30(a)(5)
Specific Limitations	Liquid contents must not fill container at 130°F. 73.302(a)(7)	Container must withstand pressure two times pressure of container at 70°F. or 1½ times that at 130°F., whichever is greater 73.302(a)(9)	73.302(a)(5)
1. Packaging a. inner	Non-refillable metal container 73.302(a)(7)	Non-refillable metal container 73.302(a)(9)	Spec. 2P metal container 73.302(a)(5)
2. Labeling 3. Marking	No labeling or marking required except marking of contents for water shipment		
4. Testing	One completed container from each lot of 500 must be heated to 130°F. without evidence of leakage, distortion or other defect.	None required	None required
	All pressures are gauge for easier use; add 15 pounds for absolute pressure. All temperatures are in 0°F.		

ICC regulations pertaining to aerosols—non-flammable and non-poisonous, exceptions to other pressure categories. (Copyright 1957 by David S. Tillotson and John Haslip.)

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fragrances insure its success!

There is a whole new world of merchandising opportunities for cosmetics, household and industrial products, thanks to Aerosols. But . . . Aerosols present special problems of fragrance compatibility. That is where Felton's creative experience makes the big difference! Our perfume chemists and Aerosol technicians will adapt or custom-create the fragrance to meet the exacting requirements of your product and give it more sales appeal.

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- Aerosol laboratory equipped with the most modern filling apparatus.
- Testing equipment for checking every component making up your Aerosol product.
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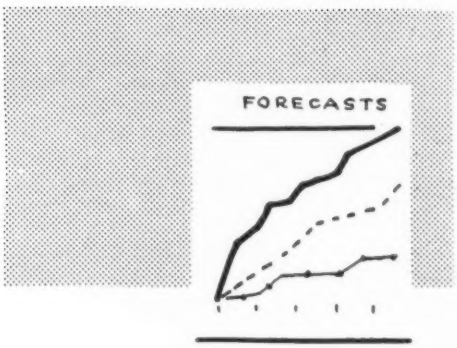
Aerosol Economics—



HARRY E. PETERSON*

TIME and again statements are heard that: "aerosol packaging is not economical," "it is an expensive method of packaging," or "aerosols are gimmicks." Invariably, these statements can be attributed to those, who while experienced in their own field, probably are not too familiar or have not kept up to date with the aerosol industry. The use of the word industry cannot be questioned since the annual sales have now surpassed $300,000,000 and they are continuing to grow.

Aerosols are expected to rapidly expand in the next three years in the cosmetic, pharmaceutical and food fields. Aerosol people realize there is much to be learned in these newest endeavors and as a consequence research and development are progressing at break-neck speed.

Any individual or firm thinking of merchandising aerosols is immediately confronted with making numerous decisions. Some of these are:

Where can we go for assistance?
Do we have suitable formulations?
What market potential has this type of product?
What are the component costs?
What is the manufactured cost?
What regulations are involved?
Do we have adequate testing facilities?
What market percentage can we obtain?
Should we consider a contract packager?
What volume (if any) will justify installing our own filling lines?
What capital investment is required?

The answers to some of these questions will undoubtedly have to be made by the individual concerned, in particular the one regarding the percentage of the market he or his firm can hope to capture. The remainder can usually be answered in a relatively short time by discussions with various people who have a long term stake in the aerosol industry and its growth. Experience is still a very good teacher and profitting by past mistakes on the part of others is a very economical method of learning. Component and raw material suppliers, fillers, consultants active in the field, the pertinent government agencies, as well as the various industry associations, especially the C.S.M.A., all stand ready to help.

Market—Past, Present And Future

Commercial production of aerosols of the low pressure type started in 1947 and went on full stream in 1948. Insecticides, as expected, predominated the first few years of production. Other products such as room deodorants and paints soon followed. During 1952 and 1953, several other large volume items jumped on the "aerosol bandwagon." These included shaving lather, hair lacquers and artificial snow.

Starting in 1954, and maturing in 1955, were various personal products, such as perfumes, colognes, personal deodorants, sun tan preparation, hand lotions, etc. The pressurized glass bottle made its debut during this same period. Prior to this, practically all of the containers were made of metal, primarily steel or tin plate (aluminum has been used to a very limited extent in this country). During 1955, approximately ten and one-half million pressurized glass bottles were filled. The largest percentage of these were plastic coated.

It will be noticed from a careful study of the attached table that it usually takes three or four years from the time a product hits the market in this new packaging form until its true potential is realized. This market penetration must be accompanied by a large and consistent advertising program. Room deodorants are a typical example. They have been on the market for seven or eight years, and while their sales curve has gone steadily upward, the great increase did not come until a national advertising program started in 1955. It is felt that this item will account for one of the largest increases in 1956 due to expanded promotional activity.

Other items which are predicted to have a sharp increase during 1956 are those falling into the perfume, cologne and personal deodorant categories. This year should be the big one for these products. The largest percentage will be packaged in glass containers, with aluminum showing a sharp increase in certain specific instances.

Medicinals and pharmaceuticals will show an increase in 1956 but it is felt that the big push in this area will be in 1958. Long term tests now underway will delay

*President, Peterson Filling and Packaging Co., Danville, Ill.

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COVER-ODORS

FOR INDUSTRIAL USES

For: Adhesives, Disinfectants, Inks — Printing and Lithographing, Insecticides, Lacquers, Paints, Petroleum by-products, Sprays, Varnishes and Waxes.

COVER ODOR A.D.H. No. 200 (A)
EUGENOL TECHNICAL (I)
FLORATYL BOUQUET No. 1009 (I)
COVER ODOR N-2 (PE)
COVER ODOR N-22 (PE)
COVER ODOR G No. 1954 (A)
COVER ODOR G.R. No. 27 (PE)
COVER ODOR J.W. No. 2404 (W)
NUTRALCO No. 350 (IN)
COVER ODOR O.B. No. 1714 (I)
COVER ODOR N-43 (I)
COVER ODOR N-4 (I) (PE) (V)
COVER ODOR P. No. 1954 (S)
COVER ODOR P.C. No. 3127 (S)
COVER ODOR P.D. No. 250 (P)
COVER ODOR R.C. No. 604 (PE) (V)
COVER ODOR SASS. No. 1954 (A)
COVER ODOR S.T. No. 275 (P)
COVER ODOR W.A.S. No. 300 (W)
COVER ODOR W.P. No. 400 (W)
RUBBER DEODORANT No. 56

A—Adhesives, D—Disinfectants, I—Inks, IN—Insecticides, P—Paints, PE—Petroleum, S—Sprays, V—Varnishes, W—Waxes

SOAPS

Oil Bouquet C No. 613
Oil Jasmin No. 613
Oil Mimosa No. 615
Oil Wild Rose No. 55
Imitation Geranium S

LIQUID SOAPS

Oil Honeysuckle No. 61
Oil Mint No. 523
Oil Narcissus No. 614
Oil Vermont Pine No. 55
Imitation Geranium No. 24

SHAMPOO ODORS

Oil Bouquet Apple Blossom No. 8240
Oil Bouquet Almond No. 8262
Oil Clover No. 888
Oil Corylopsis No. 55
Oil Bouquet H.O. No. 8267
Oil Bouquet M. No. 55
Oil Bouquet Narcissus No. 55
Oil Bouquet Wild Rose No. 55
Oil Bouquet TV No. 55

AEROSOL BOUQUETS

Apple Blossom No. 55
Gardenia No. 55
Mint Bouquet No. 55
Oil Sweet Pea No. 55
Spice Bouquet No. 55
Wistaria No. 55

IMITATION ESSENTIAL OILS

Bergamot No. 55
Citronella No. 55
Geranium No. 55
Lavender No. 55
Lemongrass No. 55
Neroli No. 55
Sandalwood No. 55
Sassafras No. 55
Ylang Ylang No. 55

PARA BLOCKS

Oil Apple Blossom No. 4314
Oil Lilac No. 4315
Oil Narcissus No. 4316
Oil Rose No. 4317
Pine Bouquet No. 4318
Bouquet R.G. No. 4139
Bouquet C.R. No. 4140

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Aerosols/1957

	1951	1952	1953	1954	1955	1956[1]
Insecticides[5]	17,319	35,839	47,236	43,179	55,975	60,000
Hair lacquers	1,000[2,3]	5,000[2,3]	15,120	35,000[3,4]	53,790	55,000
Shaving lathers	1,500[3,4]	16,682	24,299	42,295	45,387	47,000
Room deodorants	7,287	12,410	15,770	17,203	32,110	45,000
Other personal products[7]	1,149[5]	3,767	3,780	5,379	14,221	22,000
Paints and plastic sprays	2,733	6,711	10,617	9,558	9,247	11,000
Artificial snow	——	10,000[3]	8,902	6,083	6,819	6,000
Other household products	219	3,100	2,344	3,109	8,175[6]	12,000
Miscellaneous products	2,978	3,098	2,616	6,422	9,602	14,000
Medicinals and pharmaceuticals	——	——	831	1,134	1,455	3,000
Totals	34,185	96,607	131,515	169,362	236,781	275,000

1. Estimated production during 1956.
2. In 1951, 1952 and 1954 surveys hair lacquers were included in an overall category "Other Personal Products".
3. Estimated production.
4. 1951 figure was included in "Other Personal Products".
5. After deducting estimated production for hair lacquer and shaving lather.
6. Includes fire extinguishers.
7. Includes shampoos, perfumes, colognes, personal deodorants, sun tan oil, hand lotion, etc.
8. Includes space and residual insecticides and moth proofers.

Recompilation of C.S.M.A. survey results from 1951 to 1955. Add 000 to all figures.

full scale marketing until that time, even though spot test markets may and probably will be made. Numerous other large volume items have essentially reached their sales plateau. These include insecticides, shaving lather, hair lacquer and artificial snow. The sales volume on these products should continue to grow slowly, and while one or more firms' individual sales pictures may improve sharply this will be done at the expense of other marketers. Insecticides sales may well drop below the 60,000,000 mark in 1957 due to the large inventory carry over from the 1956 season.

It will be noted that predictions for the 1956 volume are 275,000,000 units. The final survey figures will be available at the May, 1957 meeting of the C.S.M.A. in Chicago. This survey is conducted by the C.S.M.A. and has been found by experts to be one of the most reliable of all those in use. From this, it can readily be seen that any continued rapid growth in pressurized packages must come from the introduction of new products which will catch on with the public. These new ventures *must be* heavily promoted.

The sales of paints and plastic sprays have remained fairly constant, but with increased effort on the development of better and cheaper formulations, better valves designed specifically for this type of product, and with a promotional effort by a well recognized paint house, this situation could change over night.

E. I. Du Pont de Nemours & Co., Inc., through their "Kinetic" Chemical Division, conducts surveys among customers and retailers. One year the customers are contacted regarding their attitudes toward aerosols and the next year the retailers. This sequence is continued and copies of these surveys which have been conducted over a period of several years are available from the Du Pont Co.

Capital Investment

The success of most companies in the cosmetic, pharmaceutical and in most cases, the food field, lie in their ability to promote and sell merchandise. Should any firm entering a new field with a relatively unknown future sales picture invest in capital expenditures an amount which could run as high as $500,000? Obviously, such a decision would have to be based on a very careful analysis of the whole problem and since many of the factors in the analysis are nebulous at best, it could almost be said that a decision in favor of such expenditure would be unequivocally wrong regardless of what factors are thought to be involved.

When the facts are facts and not conjecture it may then appear desirable to install aerosol filling facilities on home base, so to speak. The decision as to degree of automation or other refinement must be based on production needs and the standards of efficiency which must be met. Some concerns have spent over $300,000 for equipment for a single line to insure maximum efficiency and consequent minimum labor and other operating costs. The cost of a line capable of producing in the neighborhood of 100 cans per minute will run $125,000 at a conservative estimate. Lines capable of from 30 to 55 cans per minute can be installed at prices ranging from $45,000 to $80,000. All of the foregoing figures are based on refrigerated filling type installations.

It is possible to set up a pressure filling line for somewhere in the neighborhood of $10,000 to $15,000—of low capacity and having a few real production refinements. These operations are usually of economic value only where part time operation by full time employees is projected as a change off from other types of production operations. On a strict per unit cost and equipment amortization basis the economics will usually not compare favorably either with contract packaging or production from higher rate equipment. However, the concept of operational labor costing so much per year regardless of what operation it is applied to is not susceptible to effective argument in many small industrial operations.

There are a few manufacturers of equipment who have refrigerated equipment available in this same general price range. However, development work on rela-

Microscopic examination for structure of plastic components after exposure to aerosol formulation

IMITATED...BUT NEVER DUPLICATED—

THE *Precision Valve*

From planning to commercial production, a new aerosol product requires infinite knowledge, effort and research. Almost every phase of human endeavor contributes its share to the completed product.

The final use, however, is dependent upon the proper valve, which is carefully designed, engineered, and manufactured to produce the proper dispersion of spray, mist or foam.

We at Precision are ready to help you, whether it be formula, package design, or production. Our facilities can be our contribution to the success of your business.

Whether it be a million and ten **or just ten**... Precision has or will develop the aerosol valve for your product. Our large quality control department assures you of the finest results along with the economy required for profitable sales.

PRECISION

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Thinking

Insecticides
47,232,131 Units

Room Deodorants
32,110,180 Units

Other Personal Products
14,220,783 Units
(perfumes, colognes, shampoos, personal deodorants, sun tan oils, hand lotions, etc.)

Paints
7,723,368 Units

Let General Chemical help you get

Here is your shortcut to aerosol marketing:

Capable Contract Fillers

You don't have to invest a cent in plant, special equipment or personnel! There are many capable Contract Fillers throughout the country who will put up your product in aerosol form for test marketing . . . or sustained volume production.

These Contract Fillers offer a wealth of accumulated experience that is invaluable to the new aerosol marketer. And General Chemical stands ready to supplement their service with helpful market data . . . with expert technical assistance in formulating your product in aerosol form . . . and in providing the right propellant for your product.

Here are the right propellants for every aerosol need:

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AEROSOL PROPELLANTS

About Aerosols?

1955 sales figures, as reported by Chemical Specialties Manufacturers Association, Inc.

Shaving Lathers
45,387,375 Units

Hair Lacquers
53,790,785 Units

Mothproofers
8,743,351 Units

Christmas Snow
6,818,717 Units

into this high-profit field the low-cost way!

First choice of leading contract fillers and aerosol marketers for formulating household, drug, cosmetic, agricultural, industrial and other types of aerosol products, "Genetrons" provide the right pressures, the right compatibilities, for every aerosol product and every type of container.

CALL GENERAL CHEMICAL TODAY! For helpful facts and figures on the aerosol market, including data on many promising new types of aerosols . . . for help in developing the right propellants and formulations for your product–*without cost or obligation!* Ask for our special brochure: "How To Push Up Profits With Aerosols." It contains a list of Contract Fillers who can help you get into aerosols the easy, economical way!

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"Genetron" Department

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ALLIED CHEMICAL & DYE CORPORATION

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Allied Chemical

Basic Chemicals for American Industry

tively low investment pressure filling apparatus has been carried on by more companies than have concerned themselves with cold filling equipment. Generally speaking all really high production equipment is based on refrigerated filling with the consequent disproportionate comparison of the top investment level possible in the two categories.

Installations involving anything substantially less than $10,000 actually fall into the category of "get our feet wet" type of operation and seldom exist for an appreciable time without change—either the operation is expanded thereby increasing the investment or the operation is discarded. A few such installations exist as one man operations—obviously not of overall economic significance, although outside the continental United States where labor is reasonable enough to substitute for capital, such small operations are becoming increasingly popular.

In the United States it has been found that from a strictly production standpoint, the most economical and efficient production speed of automatic equipment is approximately 120 cans per minute.

Regardless of the filling equipment involved in determining the investment, the cost of the building and the space occupied by not only the production line, but also the warehouse space must be added to the cost of the equipment. A normal ratio of warehouse space to that occupied by the production line is from 8 to 10 to 1. That is, warehousing takes from 8 to 10 times as much room as production.

Contract Packager Versus Captive Line

An impartial source (Du Pont) has recently stated that about 60% of the units sold are filled by contract packagers. Others claim the figure to be as high as 75%.

There is no hard and fast rule which can be universally applied as to whether the services of a contract packager should be utilized. The earlier fear that knowledge by the loader of a company's activities such as formulas, units filled, etc. have largely been overcome. *No* contract packager can continue to exist who appropriates his customer's secrets for a momentary advantage.

A major merchandiser has recently changed its thinking on the number of units it would have to sell to justify installation of its own filling equipment from three to twenty million units annually.

There are companies who feel that all of their packaging should be done under their own roof. Many of the reasons for this feeling may be justified in the eyes of company officials. Two captive installations were installed primarily because the aerosol sales had so detracted from their other products that a curtailment of employment would result if the services of contract packagers were continued. In both cases the affected personnel were employees of long standing and it was management policy not to release them. This stand is commendable. They agreed that no savings were accomplished and one official stated that it was costing his firm money.

A not inconsiderable and frequently unanticipated expense is the special laboratory facilities which should accompany a line installation. Most larger contract packagers have fully equipped laboratories and quality control departments which allow them to meet the high standards set up by most merchandisers. In addition to research and control facilities contract packagers can be of invaluable help in determining material costs, sources of supply, and can also provide assistance on regulatory problems. Most large packagers also will purchase materials for their customers, thereby allowing them to know their exact cost per package shipped. As in any other manufacturing operation, there are numerous hidden costs in aerosol packaging and a fixed unit price on a purchase basis is a considerable accounting advantage in many cases.

Labor costs on filling plant operations will naturally vary greatly with the type of equipment and the types of products. Low investment equipment usually results in a low unit output per day per person and of course the converse must be true to justify high investment levels. Output per worker will run from as low as 500 units per day to as high as eight or ten thousand. These figures include all personnel allocated to the aerosol operation including laboratory technicians, supervisors, quality control personnel, etc.

There is no uniform service charge applied by most of the contract packagers. The type of product, the container and the volume involved are all deciding factors. Prices will generally fall between three and eight cents per unit. Basic unit prices do not include insertion into special cartons, attachment of promotional tags, complicated drop shipping, excessive storage times, or any other services above and beyond normal handling. Universally, service charges have steadily decreased until today most of the major packagers operate on "a chain store" principle—large volume and small profit per item. The fact that numerous firms can operate in this fashion bodes well for their continued existence and the continued growth of the industry.

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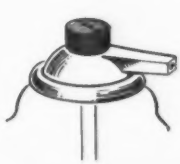

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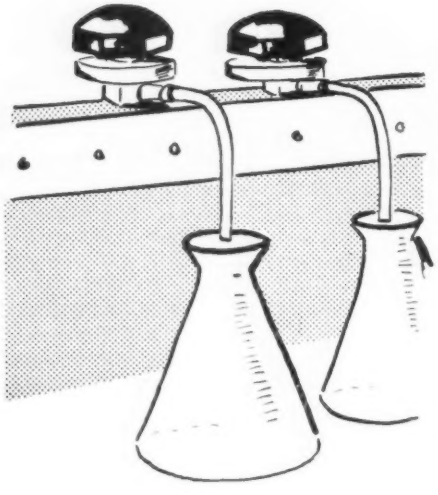


THE power behind the product in the aerosol package is the propellent. From the early work of Rotheim[1] and others prior to 1933, propellents (for aerosols) have fallen into three categories; liquefied gases, (consisting principally of the halogenated hydrocarbons), compressed gases such as carbon dioxide, nitrous oxide, air, etc. and mixtures of the two types. The chemical and thermodynamic properties desired for a propellent were quite similar to those required for a good refrigerant, (other desirable characteristics for a propellent, which by its very application is released to the atmosphere, were chemical inertness, nonflammability, non-toxicity and low cost). It was natural then that refrigerants (primarily the chlorofluoro hydrocarbons) were used for propellents in the important pioneeering work on aerosols done by Goodhue & Sullivan[2] and Fulton[3] and co-workers and Lodes[4].

The energy available to do the spraying work is a function of the expansion ratio. The expansion ratio for our purposes can be defined as the ratio of the final volume of the vaporized propellent at atmospheric pressure to the initial volume it occupied under pressure in the container before spraying. The allowable internal pressure for the container sets the upper limit of the pressure for the container contents. For the standard low pressure can this is 40 pounds or under per square inch gauge. Under such conditions it is obvious that a liquefied gas possesses distinct advantages over the compressed gases. Liquefied gases provide a nearly constant pressure during package operation and have a large expansion ratio per gram. Dimethylether, for example, increases in volume over 350 times in expanding from a liquid under its own vapor pressure to a gas at atmospheric pressure. For a comparable pressure change, compressed gases have only an expansion of three to ten volumes available, depending upon their solubility in the liquid contents under the initial pressure employed. Since expansion of a gas between two pressures is all that is involved, rather than a change from a liquid to a vapor state, there is an appreciable drop in pressure in the container during the service life of the compressed gas package. As a result, the principal commercial aerosol packages have been made with propellents of the liquefied gas type, drawn largely from non-toxic and nonflammable refrigerants. The principal propellents have consisted of dichlorodifluoromethane (Propellent 12), trichloromonofluoromethane (Propellent 11), dichlorotetrafluoroethane (Propellent 114), methylene chloride and minor quantities of propane, butane, isobutane, dimethylether, difluoromonochloromethane and monochlorodifluoroethane, and methyl chloroform.

The most widely used propellent combination has been a 50-50 weight percent (35 pounds per square inch gauge at 70°F) mixture of Propellent 12 and Propellent 11. Propellent 12—methylene chloride and Propellent 12—Propellent 11 and methylene chloride mixture have also gained increasing acceptance in a wide variety of products. One new propellent mixture which has gone into several million packages is Propellent A, (a mixture of Propellent 12—Propellent 11 and isobutane)[5].

Solvent and Chemical Characteristics

The solvent and chemical characteristics of the propellents have played an important part in determining the type of formulations which could be made into successful products. The highly fluorinated, (but chemically stable) chlorohydrocarbons such as Propellent 12 and Propellent 114 have a limited solubility for some active ingredients used in aerosols. In the formulation of insecticides, for example, Propellent 11 and methylene chloride not only are used as diluents to lower the pressure of Propellent 12 but also they provide the higher solvency that simplifies production formulation practice.

In aqueous systems such as foam or emulsion type products Propellent 114 is commonly used in conjunction with Propellent 12 to get the chemical stability and resistance to hydrolysis desired.

Aerosol formulations can be classified into the so called *two phase type* where the complete formulation constitutes a single liquid phase with equilibrium vapor from the liquid phase occupying the free vapor space and the *three phase type*, usually emulsions, where one liquefied phase consists of the oil-like propellent and the other phase is either an aqueous or alcoholic solution. The emulsion systems usually separate into two liquid layers under the conditions of aerosol storage. The relative position of the propellent-rich phase in such systems, naturally depends upon its liquid density as com-

[6] Aerosol consultant, Aerosol Process Co., Bridgeport, Conn.

Propellents—

WINSTON H. REED, Ph.D.*

pared to that of the aqueous phase. Many of the recent aerosols of the two phase type have utilized propellents that were heavier than the active ingredients. These products required the use of a dip tube which was immersed only in the upper layer, a system that had obvious disadvantages. The use of hydrocarbons to lower the density of the propellent phase gives a propellent which floats on the top and so eliminates the stand pipe difficulty.

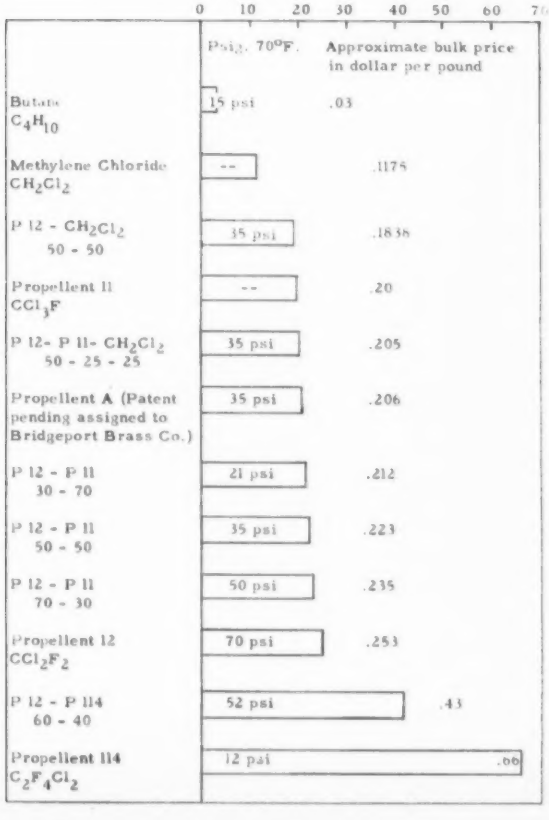
Corrosion troubles especially in the aqueous or alcoholic aerosol products are frequently in part a propellent problem. Aerosol packages are much like dry cell batteries in that a satisfactory service life is contingent upon consideration of the chemical behavior of the entire package. The aerosol packages with liquefied gas propellents are similar to refrigeration systems in some respects. In these aerosols, the propellent is at its boiling point and thermal gradients in the package will promote refluxing. This action leads to some interesting behavior corrosion-wise, especially in emulsion systems.

In certain types of aerosol products, by suitable combination of ingredients and propellent, excellent foams can be produced. This application has found wide use especially in shaving creams and will find substantial growth with the advent of other desirable foam type formulations.

Fine powders (e.g. talc, antibiotics, etc.), may be dispensed by pressure packaging and here again is a case where the nature of the propellent may play an important part in keeping the powder particles in a dispersed condition. It should be mentioned, however, that the successful spraying of powders is, to a major extent, a valve and a physical problem, rather than a chemical one.

The development of new aerosol products for the pharmaceutical, cosmetic and food fields, will require further propellent research in many cases. Initial efforts in the food field rely on the use of carbon dioxide and/or nitrous oxide, because of the background of experience already obtained with pressurized whipped cream. It would impose severe limitations to the development of new products in these areas if these gases were the only available propellents. Progress can be expected in this area.

Relative cost of principal aerosol propellents.



Propellent Costs

In the two phase aerosols which comprise the bulk of the aerosol products sold, propellent costs may run between 25 and 40 percent of the factory cost of the package. In these products, the propellent may constitute between 20 and 90 weight percent of the formulation.

The amount of propellent used in foam and emulsion type aerosol products, on the other hand, is substantially less, falling between 5 and 20 weight percent of the formulation, in most cases. Propellent cost for a typical foam product, such as shaving lather, might constitute about ten percent of the factory cost. The relative cost of the most widely used propellents is given in the accompanying figure. The gauge pressure of these propellents at 70°F. is also listed.

The drive for cheaper propellents has led to the introduction of moderate amounts of hydrocarbons as propellent diluents and has pushed research on aerosol emulsions and on new propellent systems.

Progress is being made from the re-examination of older refrigerants and aerosol propellent developments and from the exploration of new territories. It may be expected that these avenues of research will lead to important cost reductions and other changes. These will broaden the market for aerosols, from the standpoint of both product price and product variety.

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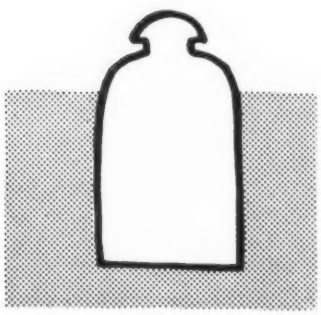
Aerosol Formulations—



VICTOR DiGIACOMO*

SINCE the inception of the low pressure aerosol package, a great deal of work has been done to develop various types of formulations for this medium. The first products tested in this new package were, in most instances, formulations previously developed for non-pressure application. In the majority of cases, it was found that the formulations were incompatible in the aerosol, resulting in non-operative cans due to valve or container failure or the decomposition of the contents. Many formulations that did not lend themselves to this new type of package were put up in aerosols for their novelty value, resulting in poor consumer acceptance and consumer opinions detrimental to the industry. However, due to the extreme interest in this type of packaging, much research has been conducted and the packaging industry has become educated regarding the merits of this new medium.

Foam Aerosols

One of the first departures from the original atomized sprays in aerosols was the foam type for cosmetic and pharmaceutical application. Pressure packaging was especially suitable for shave creams since the package performed the additional function of creating a lather while dispensing the product. The type of formulation used in a pressurized foam package does, however, differ considerably from the conventional shaving creams inasmuch as it cannot definitely be classified as either lather or brushless. Due to the ingredients it contains and the method by which it is dispensed, it is actually a combination of both.

The choice of certain of the constituents used in the aerosol shave cream is based on the degree to which they will absorb the propellent, which aids in the lathering of the product during use. The selection of fatty acids and soaps or mixtures of them, must be based on the type of lather desired in the finished product—(a closely knit structure or one of loose texture), as well as the normal functional considerations always present. Properly tested synthetic detergents may be added which increase wetting of the beard and the retention of moisture on the skin, resulting in good shaving properties. Other ingredients which might be used include: bactericidal additives, and a detoxifying agent such as polyvinyl pyrollidone (serves also as thickening agent on occasion).

The normal concentration of soaps in the form of triethanolamine stearate and myristate contained in an aerosol formulation is rather low in comparison to conventional products. This is necessary to prevent the product from becoming jellified in the container, resulting in a product which cannot be dispensed.

Modification of these formulation types becomes necessary when foam products are prepared for other end

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uses such as pet shampoos. In this product larger quantities of detergents may be used, such as triethanolamine lauryl sulphate, with the addition of pyrethrins and synergistic agents for insecticidal characteristics.

In products such as foam cologne aerosols, where the foams are used as a carrier for the perfume composition, formulations must be so prepared that the ingredients will not interfere with the perfume constituents, and the base must be capable of being absorbed into the skin without leaving a residual or oily effect.

Since most foam products contain a large quantity of water, it is important that a container and valve specifically designed for such use be selected. Care must also be taken in the choice of a propellent or propellents with particular attention being given to the problem of hydrolysis when certain propellents are used in the presence of water. The propellents which have been satisfactorily used in such products include Freon(R) 114, Freon or Genetron(R) 12, Genetron 101, and Genetron 320.

In view of the current patent situation covering the use of the chlorinated and fluorinated hydrocarbons in the presence of fatty acids, certain manufacturers have resorted to the use of butane and propane with a great deal of success. When a substitute is made in the propellent mix, it is extremely important that consideration be given to the fact that certain adjustments may be necessary in the foam formulation to obtain the desired performance of the finished product.

There are today many household foam type products which have been packaged in aerosol containers including protective hand creams, polishes, household cleaners, etc. In certain of these products some of the materials used may not be compatible with certain of the constituents and propellents. Compatibility and stability testing is, therefore, necessary to determine what products should be used and what substitutes are necessary in order to prepare a suitable aerosol product. We must keep in mind that materials which are tested individually and show good stability when packed with propellent may react differently when they become part of a compounded formula. Such a preparation necessitates the testing of the entire product under normal shelf life conditions to determine product stability and the degree of product efficiency. It is highly important that materials selected for the aerosol formulation be of the highest purity. Products which have inherent by-odors will create a new perfuming problem and such by-odors will show up more predominantly in an aerosol package than in a non-pressurized formulation. This condition may be caused by the incompatibility of the foreign materials in the presence of the propellent or other constituents of the aerosol product.

Many new raw materials are today being manufactured as a result of the special requirements of aerosol-packaged products. The producers of these materials, in order to assist in the formulation of finished products, have already accumulated solubility and compatibility data which can be made available.

Powder Aerosols

A recent development in pressurized packaging is the powder aerosol. Aerosol dispensing of powdered products can offer certain advantages over conventionally packaged materials. The dispensing of powders from aerosols gives a certain degree of uniformity to the product. Perfume constituents and bacteriological materials are not subjected to oxidation, resulting in longer shelf life of the entire package. Ingredients which are usually hygroscopic when normal packaging is used are not so affected when packaged in this new medium. Another important characteristic is the sterility which can be obtained when pharmaceuticals are aerosol packaged.

Powders which are to be packaged in pressurized containers must be formulated accordingly. A prime requisite is that the material be uniform and the powdered constituents be a definite particle size. It is recommended that gums and resinous ingredients which are insoluble but may soften or agglomerate in the propellent be eliminated from the formulation in order to prevent valve clogging or interference with valve seating. These conditions would otherwise result in non-operative or leaking containers.

The concentration of solids for this type of product may vary between 10% and 30% depending on the type of product and the end use of the formulation. The propellent mixture is normally composed of 65% propellent 11 and 35% of Propellent 12. Valves should be selected with the assistance and the recommendation of the valve manufacturers, based on tests with the actual formula under consideration.

We have found through extensive experimentation that a good suspending material is absolutely necessary for the aerosol dispensing of a powder product, and this agent must have the following characteristics:

1. It must be soluble in the various propellent mixes which might be used.
2. It should be completely odorless or have a low odor level.
3. It must be compatible with other ingredients of the powder formulation and be able to solubilize certain constituents used for bacteriological or perfuming purposes.
4. It must not be residual in character nor must it be irritating when sprayed from an aerosol.
5. It must be usable in low concentrations and prevent agglomerative sedimentation of the powdered formulation.
6. It must not react chemically with any of the aerosol components and should be, if at all possible, usable as co-solvent between the propellent and other constituents of the formulation.

We have found that a purified grade of isopropyl myristate meets all the requirements listed above and can be used for this application. It is recommended that a concentration of between 2% and 5% of isopropyl myristate be used, based on the weight of the finished *base* mixture. The use of a higher concentration in products such as plant sprays, make-up, etc., adds to the functional properties of the finished product. It creates a product with a greater capacity to adhere to a given area of application. Due to its excellent co-solvency and solubilizing properties, this suspending medium performs another function, in many cases, by preventing the crystallization of the perfume and bacteriological ingredients, which would otherwise result in valve difficulty.

It has been shown that the greatest absorption of a powdered plant fertilizer is through the plant foliage. With this new method of dispensing, most plant sprays could be advantageously prepared as powder aerosols due to the excellent adherence of such a formulation as well as its highly functional nature.

Cosmetic and pharmaceutical powdered aerosols have definite functional application as deodorant and bacteriological sprays, in addition to pet and insecticide sprays which will have extreme residual qualities.

Aerosol Sprays

The products which were mostly responsible for the success of the aerosol container were insecticides and mothicides. When they were originally introduced, they consisted of a toxic agent dissolved in an aromatic hy-

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drocarbon solvent plus, of course, a propellent necessary for proper dispensing. Many changes have been made since the original introduction of these household sprays. As a result of research new toxic and synergistic materials have been developed for the production of sprays which may have a dual application, such as moth and insect sprays, insect or plant sprays, or insect and room deodorant sprays.

Certain factors must be taken into consideration when formulating this type of product. The solvents used as carriers for the toxic ingredients and synergists, if any, must be selected with their irritating properties and odor level in mind. It is also necessary to consider the compatibility of these products with each other as well as the effect they might have when aerosol sprayed. We have found that the addition of .1% to .5% of isopropyl myristate reduces the irritating properties of the aerosol spray and at the same time reduces the odor level of the entire insecticide mixture. The selection of a perfume ingredient must also be given careful consideration with particular attention to the coverage of inherent malodors as well as to the positive odor appeal the finished product will have for the consumer.

Another of the important aerosol products now on the market is the household space spray. The basic ingredients used in this type formulation are low concentrations of triethylene glycol, dipropylene glycol, quaternary and other bacteriological compounds in addition to isopropyl alcohol, ethanol or a hydrocarbon solvent as a carrier. Normally the ratio of basic ingredients to propellents as used in a formulation of this type is a 15% or 20% base mix and 80% to 85% propellent mix. The latter usually consists of Propellent 11 and 12. There are other ingredients that can be used in space sprays, particularly for air sanitation and for the reduction of odor levels. By reason of the nature of this product, it is our opinion that the selection of the perfume composition to be used in it is of extreme importance and may be almost wholly responsible for its ultimate success or failure.

One of the most important aerosol products now being marketed and one which is responsible for a large percentage of aerosol sales, is the aerosol hair set. Formerly, this type of product was based on an alcoholic shellac formulation which had extremely poor stability, and, due to its relative incompatibility with propellents, had a short shelf life. Most formulations of this product now use polyvinyl pyrrolidone, usually with the small concentration of lanolin. A plasticizer, such as isopropyl myristate or myristic alcohol, is also used in addition to a perfume oil. Anhydrous ethanol is generally used as a solvent, and the ratio between the principle and the propellent is approximately 30% base and 70% propellent. The latter mixture may consist of equal quantities of Propellent 11 and 12 or there may be up to 70% Propellent 11 with corresponding proportions of Propellent 12. Care should be exercised in the use of the anhydrous alcohol to prevent moisture contamination. Propellent 11 hydrolyzes in the presence of water and the resulting acids will have a deteriorating effect on the entire package.

Regardless of the type of aerosol involved it is important that as complete a knowledge be had of all the constituents used in the product, as is possible. This will help prevent the use of any one material or combination of materials which would create deteriorating conditions and result in a non-functional product.

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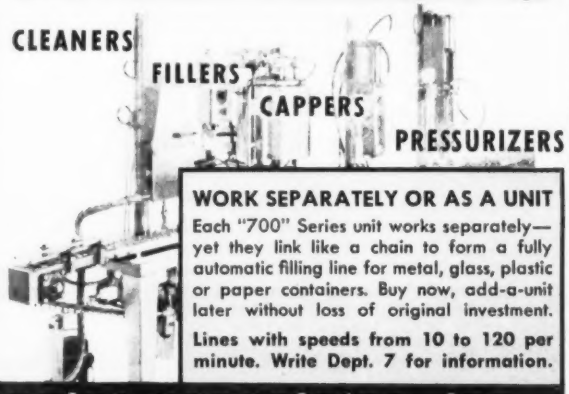

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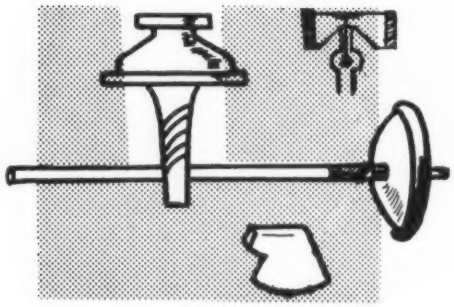

S. JACK CAMPBELL*

PROBABLY the most basic part of any aerosol or pressurized package is the valve mechanism through which the content of the package is emitted. Consequently, the valve on any aerosol package should receive major consideration. The intricacies, and complications of the aerosol valve are many, and this is verified from the fact that there are practically as many different types and variations in aerosol valves as there are different types of aerosol products. One valve manufacturer has indicated that they have available, more than 100 variations in their valve for various applications and formulations.

It is not possible to emphasize too strongly the importance of proper choice of a valve. An organization inexperienced with aerosols, and anticipating adding an aerosol package to its line, should be encouraged to follow the advice of people experienced with aerosols such as the valve manufacturer or the filler. They should not be impatient if a relatively long test period of the valve with the new product is advocated.

The major factors controlling the spray characteristics and delivery rate are viscosity of the total formulation, pressure, temperature, and ratio of propellent to active ingredient. The operating temperature is usually assumed to be room temperature or 70°F. The pressure is generally controlled by choice of propellent. The viscosity is controlled by the active ingredients, and the associated solvents and diluents, in combination with the propellent.

The physical and mechanical construction of the valve mechanism is a close second in controlling spray characteristics and delivery rate. For liquid spray products, the valve mechanism usually involves at least two orifices with an expansion chamber between the orifices. The expansion chamber is necessary to the production of extremely small particles by the valve. The size of the valve orifices, the size of the expansion chamber, and the shape of the orifices also contribute to spray characteristics and delivery rate.

Offhand the definition of an aerosol valve might be considered to be "a mechanism with which to produce a controllable leak in a pressurized container." Unfortunately, this definition is much too simple. This can be illustrated by simply creating an extremely small hole in a filled aerosol can and observing the spray characteristics. For all practical purposes, the dispensed material streams from the can and the droplets, so produced, are very large. It then becomes obvious that the above mentioned double orifice system with the associated expansion chamber becomes very necessary to create the atomization desired.

Probably the simplest of valves available for pressurized packages is the valve used to dispense foam products. With this valve, usually there is only one orifice with the necessary expansion chamber in the form of a tube external of this orifice. In the case of foam products, the contents of the can under pressure is an emulsion blend of the liquid active materials with the liquid propellent. When the valve is actuated to dispense the contents, the liquid blend leaving the container is exposed to atmospheric pressure as compared to the much higher internal can pressure and consequently the propellent immediately starts to boil, changing from a liquid to a gas, and thus blows up the millions of tiny bubbles in the active ingredient liquid material, resulting in a foam.

There are two basic types of foam valves available. One type has a dip tube attached to the bottom of the valve and extending down to the bottom of the can. This "with dip tube" type requires that the valve be actuated with the can in the upright position. The other type foam valve does not have a dip tube attached to the valve and consequently the valve has to be actuated with the can held in the inverted position.

For several years, valve manufacturers have been altering the shape of the outer orifice in aerosol valves to control the spray pattern and spray characteristics. Only fairly recently, the physical construction of the outer orifice has been radically changed to create mechanical atomization of the liquid being dispensed. This mechanical atomization feature is usually involved in the outer orifice of the actuator button. This special button is usually referred to as a "mechanical break-up" button, and works generally on the principle of the pump-tank garden sprayer nozzle.

The mechanical break-up button has allowed the aerosol industry to atomize liquids which previously were very difficult to atomize. Using the mechanical break-up button on regular spray products will not only increase the atomization of the resultant spray but in many instances, the formulation may be altered to very low pressures while maintaining satisfactory spray character-

*Continental Filling Corp.

VALVE COMPANY	SPRAY VALVES FOR CANS			BOTTLE VALVES			FOAM VALVES		POWDER VALVES	FOOD VALVES
	Space spray	Surface coating	Mechanical break-up	Regular spray	Mechanical break-up	Meter spray	with Dip tube	without Dip tube		
Aerosol Research, 743 Circle Ave., Forest Park, Ill.	x	x	x	x	x		x		x	
Calmar Dist Co., 5020 Spring Grove Ave., Cincinnati 32, Ohio			x*		x*					
Clayton Corp., 4205 Forrest Park Blvd., St. Louis 8, Mo.							x	x		
Dairy Whipt, 39 S. LaSalle St., Chicago 3, Ill.								x		x
Delta Dynamics, 4615 W. 20th St., Chicago 50, Ill.	x	x		x						
Demert & Dougherty Inc., 3001 W. 47th St., Chicago 32, Ill.								x		x
Dill Manufacturing Co., 700 E. 82nd St., Cleveland 3, Ohio	x**					x				
Nanuet Valve Co., Route 59, Nanuet, N.Y.	x	x	x	x	x	x	x	x	x	x
Newman-Green Inc., 151 Interstate Road, Addison, Ill.	x	x	x	x	x					x
Oil Equipment Labs, Inc., 600 Pearle St., Elizabeth, N.J.	x	x	x				x			x
Precision Valve Corp., 700 Nepperhan Ave. Yonkers, N.Y.	x	x*	x	x	x		x		x*	x
Pressure Pack, Inc., 18550 Mack Ave., Detroit 36, Mich.		x*							x*	
Risdon Manufacturing Co., Box 520, Naugatuck, Conn.	x	x	x	x	x	x	x		x	x
Seaquist Manufacturing Corp., First St., Cary, Ill.	x	x					x			x
Sun Tube Corp., 181 Long Ave., Hillside, N.J.	x	x	x				x			x
Super Whipt Co., 715 S. Damen Ave., Chicago 12, Ill.								x		x
Valve Corp. of America, Inc., 1720 Fairfield Ave., Bridgeport, Conn.	x	x	x	x	x	x	x			x

* *Actuator button only* ** *Sealed valve only*

istics. Probably the most important feature of the mechanical break-up button is its ability to atomize water base materials. This has generally been considered impractical with previous valve mechanisms. The propellent does not need to be either miscible or emulsifiable with the active material when the mechanical break-up button is used. In general, the development of this actuator has opened up a completely new field of aerosol products.

An aspect of valve design which serves to compound the difficulty is the not-to-be-disregarded factor of pressure "fillability." Certain products require that the propellent be introduced by pressure filling (i.e., through the sealed-on valve) other products are best filled this way, and some filling lines are set up to fill all packages solely by pressure. This presents the problem of introducing a large amount of propellent on a production basis through an orifice system designed to allow flow in terms of a few grams per minute. The problem has been solved in varying degrees by various manufacturers, but basically, design ingenuity has resulted in valves having large flow characteristics, from outside in, while maintaining all the desirable characteristics of valve performance for flow from inside out. This performance characteristic can have a distinct bearing on choice of a valve if pressure filling is a production factor.

Another new development for aerosol valves has been the metered valve. This valve produces the sometimes desirable feature of dispensing only a small measured amount of material on each actuation of the valve button regardless of how long the button is held down. The meter spray valve is generally available in a number of different sized chambers to produce the delivery volume desired on each actuation of the valve.

Probably one of the most difficult development problems presented to the valve people recently has been a good powder dispensing valve. A few valve companies have adapted their valve to be used as a powder dispensing apparatus if the dry powder material presents itself in proper physical form and characteristics. Each powder formulation has to be studied to determine its own particular characteristics in regard to valve clogging, seepage, etc.

Materials of construction are also important factors to consider when choosing an aerosol valve for a new product. A list of materials generally being used to make up valves would include stainless steel, tinplated steel, nickleplated steel, chromeplated steel, aluminum, brass, polyethylene, nylon, teflon, polystyrene, buna N, rubber, and neoprene.

There is quite a large variation in the current selling price of valves. The least expensive valves are available for about $38.00 per thousand. The more complicated and special purpose valves may run up to $120.00 per thousand.

The table is a check list indicating the general types of valves available from each valve supplier. Obviously, this list is very general and for quick reference only. Any special adaptations of a valve should be discussed with the valve manufacturer.

The valve industry has expanded and improved along with the aerosol industry itself. This is indicated by increased production rates, generally less complicated mechanisms, and perhaps of most importance, is the fact that all of these reputable valve suppliers have set up a close system of quality and production control, realizing that they are producing perhaps the most delicate part of the aerosol package.

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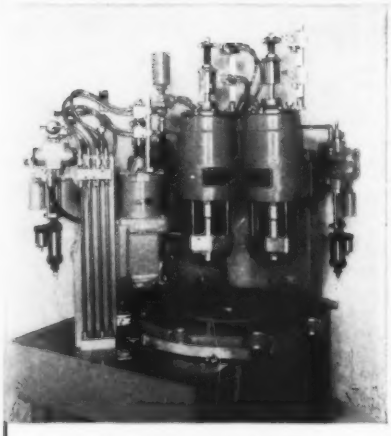

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. . . brings you Speed, Economy — two stages of filling (product and propellent) handled by single unit • Air operated • Explosion proof • Predetermines valve tolerance so each filling is accurate and complete • Low maintenance. Your own mechanic can service it • A proven success with every type of aerosol package • Let us arrange demonstration at your convenience • We'll prove that this way, *your 12 ounce containers can be filled at lower cost than by the cold filling process.*

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The New Series 500 Pres-O Valve

• Faster filling • Accurate discharge rate • Approved for all pressurized products, foam and/or spray.

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Replica of perfume bottle used in the year 1768

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220 East 23 Street, New York 10, N. Y.

GRASSE · PARIS · LONDON · SAO PAULO

Metal Containers for Aerosols—

DAVID S. TILLOTSON*

USING an aerosol in the home or shop is the final step in the fascinating assembling of capital, materials, scientific know-how, and manufacturing proficiency.

Of the materials used the metal container plays a predominant role because, upon it, for the large majority of aerosols, rests the sales appeal, chemical stability, the functional use, and compliance with a host of regulations safeguarding the public user.

There are few packages which have the same sales appeal as the neat, round, multicolored container which will do work for you. The metal aerosol containers vary in size from fractional ounce aluminum tubes to five gallon steel cylinders. They can be labeled, silk screened, or lithographed in colors. They are variously sized for the home, in the automobile, for picnics, at the shore, while traveling, in hospitals, and use by the military services. Natural ease of use and packaging beauty have put the aerosol across to the world faster than any other type of packaging. Behind this progress lies a solid core of technical facility which makes it possible.

The chemical stability of an aerosol is a truce between materials each of which have specific functions, and which must stay together until satisfying the user. Our friend, water, likes to have the container well protected with a lacquer lining so that base metal will not entice attack or promote hydrolysis. The non-water-bearing aerosols are usually docile inhabitants of plain metal, with the exception of insecticides who feel safer if lacquer linings prevent their meeting bare metal. The alcohol of hair spray fame keeps his friends in good stable relationship, with plain half pound tin-plated steel containers, if only his boss, the chemist, keeps unwelcome water from joining him in the container.

There is a wide selection of metal containers which will package safely almost any aerosol product desired such as foam, surface spray, space spray, topical medicinal, etc.

In the United States a number of types of metal containers are available. All of these containers have a characteristic in common—namely the need for protection of the base metal against certain of the contents. Various organic coatings have been used which may consist of heat polymerized films of phenolic or epoxy resins, baked vinyl polymers, or combinations of two or more of these applied as varying numbers of multiple coats. Generally vinyls are used as final coats since their flexibility tends to support more brittle undercoatings. Coating application may be by spray gun or roller coater or combinations of both.

A breakdown of material and fabrication types of metal containers follows:

Heavy gauge black iron plate with brazed or silver soldered joints. This material was used for the original World War II containers (Bridgeport Brass-Westinghouse), and is still used to some extent in the same general form (Bridgeport Brass). Size of these rarely runs over one pound (av.) capacity. Containers may be returnable or not. Generally they are exteriorly coated for protection against atmospheric corrosion,—seldom interiorly coated. Almost a minor (numerically) factor in metal containers has been the heavy gauge steel container supplied from the compressed gas cylinder sources. Capacities range from two to five, or even ten pounds. Cylinders are fitted with changeable spray heads and are always refillable. These have been used almost exclusively by commercial pest control people for spraying large volumes of insecticides. The containers are seldom interiorly coated.

Recently the Tube Manifold Corp. set up to produce steel plate cylinders from two to five pounds capacity on a mass basis and for a price that would allow their

* Isotron Sales Services, Pennsylvania Salt Manufacturing Co. (Copyright 1957 by David S. Tillotson.)

Now, by Peerless, to meet a long-felt need, a purse or pocket size aluminum aerosol container for perfumes, colognes, deodorants and pharmaceutical products.

Leak proof because of its seamless bottom and the small aperture at the top. Light in weight, much less than glass or plastic. Unbreakable. Withstands higher pressures. Greater capacity because of its thinner walls. Length, down to one inch. May be decorated in four colors on a base coat.

For the drug industry, perfect for throat and nose sprays. For the cosmetic industry, ideal for perfumes, colognes, deodorants and many kindred products.

Call Peerless for further information.

NOW A NEW AEROSOL CONTAINER

FOR PERFUMES AND PHARMACEUTICAL PRODUCTS

PEERLESS TUBE COMPANY
Bloomfield, New Jersey

New Du Pont survey reveals . . .

AEROSOL COLOGNES PREFERRED

DU PONT FREON

3 TO 1 BY WOMEN WHO TRY THEM

New Du Pont survey reveals that in the exotic world of fragrance a more effective package is a substantial aid in the creation of consumer appeal. Survey data shows: more than 7 of 10 women who try them prefer the aerosol method for dispensing colognes.

Yet, only 26% of those interviewed had ever heard of cologne or toilet water in an aerosol, and only 12% had ever tried them. Imagine the big-volume, big-profit sales waiting for you when you capitalize on the high consumer satisfaction with aerosols spotlighted by this survey. Why not take advantage of this potential market and promote aerosols?

E. I. du Pont de Nemours & Co. (Inc.), "Kinetic" Chemicals Division 291, Wilmington 98, Delaware.

Custom fillers have the necessary specialized equipment and experience to help you manufacture your aerosol. They can help in many ways—product evaluation, formulation, testing, container selection and labeling, filling, packing and shipping. Write Du Pont for names of qualified fillers near you.

Low-pressure Du Pont "Freon"* propellent solutions give effective spray pattern, perfume solubility and odor stability in distinctively styled containers for aerosol colognes. And Du Pont offers you technical and marketing know-how to assist your aerosol program. For more information or assistance write Du Pont at the address above.

propellents—

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*"Freon" is Du Pont's registered trademark for its fluorinated hydrocarbon propellents.

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As evidence of the safety of these anti-microbial agents, you can now use them in certain ointments, creams, lotions, drops, etc., that can be sold over the counter.

When you formulate such products, Pfizer, the world's largest producer of antibiotics, can help you with up-to-date information, including application data.

And from a nationwide network of warehouses, Pfizer can supply you, in a hurry, with *bulk* quantities of neomycin, polymyxin and bacitracin. Neomycin and bacitracin are available in special micronized form for easier preparation of ointments.

Call on your Pfizer salesman for these antibiotics and also for penicillin, streptomycin and dihydrostreptomycin. Pfizer offers the most extensive line of quality-controlled bulk antibiotics on the market! Write today for technical information.

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☐ Please send me Technical Bulletin #63 on Neomycin.

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discard after one trip. All kinds of special fitments can be provided but the real volume items are expected to be the two and three pound cylinders provided with a standard one inch aerosol container opening. Interior coatings have been explored but are not a matter of regular production.

Drawn Tin Can Industry Containers. The source of these containers is limited to the Can Division of Crown Cork and Seal Co. Sold under the name of "Spra-Tainer"—the body is multiple die drawn from flat sheet stock without a side seam. The bottom is double seamed as in any can and the standard one inch opening is provided in the top of the drawn body. These containers are available as follows: Black Iron—Lacquer coated inside and out; Tinplate—bare inside—coated outside; Tinplate—Coated inside and outside. The manufacturing process allows for precise single or multiple color exterior decoration. Interior coatings vary with intended use. Available in 6 oz. and 12 oz. sizes. They are usually available undecorated (to be labeled) from loaders or from the company in somewhat smaller quantities than the minimum order for specially decorated cans which is approximately 35,000 cans per run.

Fabricated Tin Can Industry Container. Essentially, these are modified beer cans. They are available from the three major companies (American Can Co., Continental Can Co., and Crown Cork and Seal Co.) Available in tinplate they may be coated or uncoated inside or out—can be lithographically decorated and offer the advantage of relatively great size flexibility in manufacture. Presently available in from 3 to 17.6 oz. sizes, there are rumors of sizes up to 22 oz. They can be supplied with standard one inch opening tops or valves can be incorporated into a standard end which is applied by double seaming. All of these containers are characterized by the soldered side seam in the body.

Aluminum Containers. All of these containers made in the United States, are impact extruded by pressure exerted on an aluminum slug in the same way that collapsible tubes are made. They offer great flexibility in size, due to the method of manufacture. External decorations can be of the highest degree of perfection. Internal coatings are used in numerous cases. Standard one inch opening; bottle type necks; and top treatment for external rolling of special valve ferrules are all available, as are integrally mounted valves from some manufacturers.

Aerosol Component Manufacturers

Appearing on the international scene are many aerosol component manufacturers, with an expected 1956 market of nearly fifteen million containers in Europe. From a container standpoint, the most interesting development is the rise of the spun aluminum container in Italy and France which has played a major role in new packaging concepts. Not yet competitive to American producers, they can fill a growing immediate need in the European market.

All United States containers are made to rigid specifications and are controlled for end use pressure by the Interstate Commerce Commission, who, through the Association of American Railroads—Bureau of Explosives, follow very closely the recommendations of the Chemical Specialties Manufacturers Association.

The pressure of aerosols is governed by the use of safe, nonflammable propellents (Isotron*, Freon*, and Genetron*.) The pressure developed by these propellents is a result of mixtures of various propellents and other ingredients such as water, alcohol, kerosene, methylene chloride, etc. The containers holding the aerosol must have certain limits placed upon them so as to be safe for shipping, storage, and end use. The safe limits are designated usually as 40, 60 and 70 pounds gauge pressure at 70° F., with the heavy steel cylinders having a higher limit of 240 pounds.

Most of the containers used have a 40 pound gauge per square in. upper limit, whereas a special 2P specification Spra-Tainer made by Crown Cork and Seal Co. is usable up to 70 pounds gauge pressure at 70° F.

The future of the aerosol industry, judged by past performance, should be considered excellent. The estimated number of containers to be sold in 1956 is close to three-hundred million, approximately a 20% increase over 1955.

There are many details which are impossible to include at the moment but which are effective in producing an excellent aerosol. The container manufacturers have well equipped facilities for evaluating a potential market item and are keenly aware of the technical difficulties which can arise if proper ground work is passed over in preparing a product for marketing. Their customer service staffs are an important source of guidance for anyone new to aerosols.

Manufacturers of Metal Containers

American Can Co.
100 Park Avenue
New York, N. Y.

Continental Can Co., Inc.
100 E. 42nd St.
New York, N. Y.

Crown Cork & Seal Co., Inc.
Can Division
9300 Ashton Road
Philadelphia, Pa.

Emson Research, Inc.
22 Burr Court
Bridgeport, Conn.

Hunter Douglas Aluminum Corp.
3016 Kansas Avenue
Riverside, Calif.

Peerless Tube Co.
66 Locust St.
Bloomfield, N. J.

Pressed Steel Tank Co.
West Allis Station
Milwaukee 14, Wisc.

Tube Manifold Corp.
1100 Military Road
Buffalo, N. Y.

White Metal Manufacturing Co.
1012 Grand Street
Hoboken, N. J.

* Halogenated hydrocarbon
TM (Pennsalt, Du Pont, General Chemical)

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Aerosol

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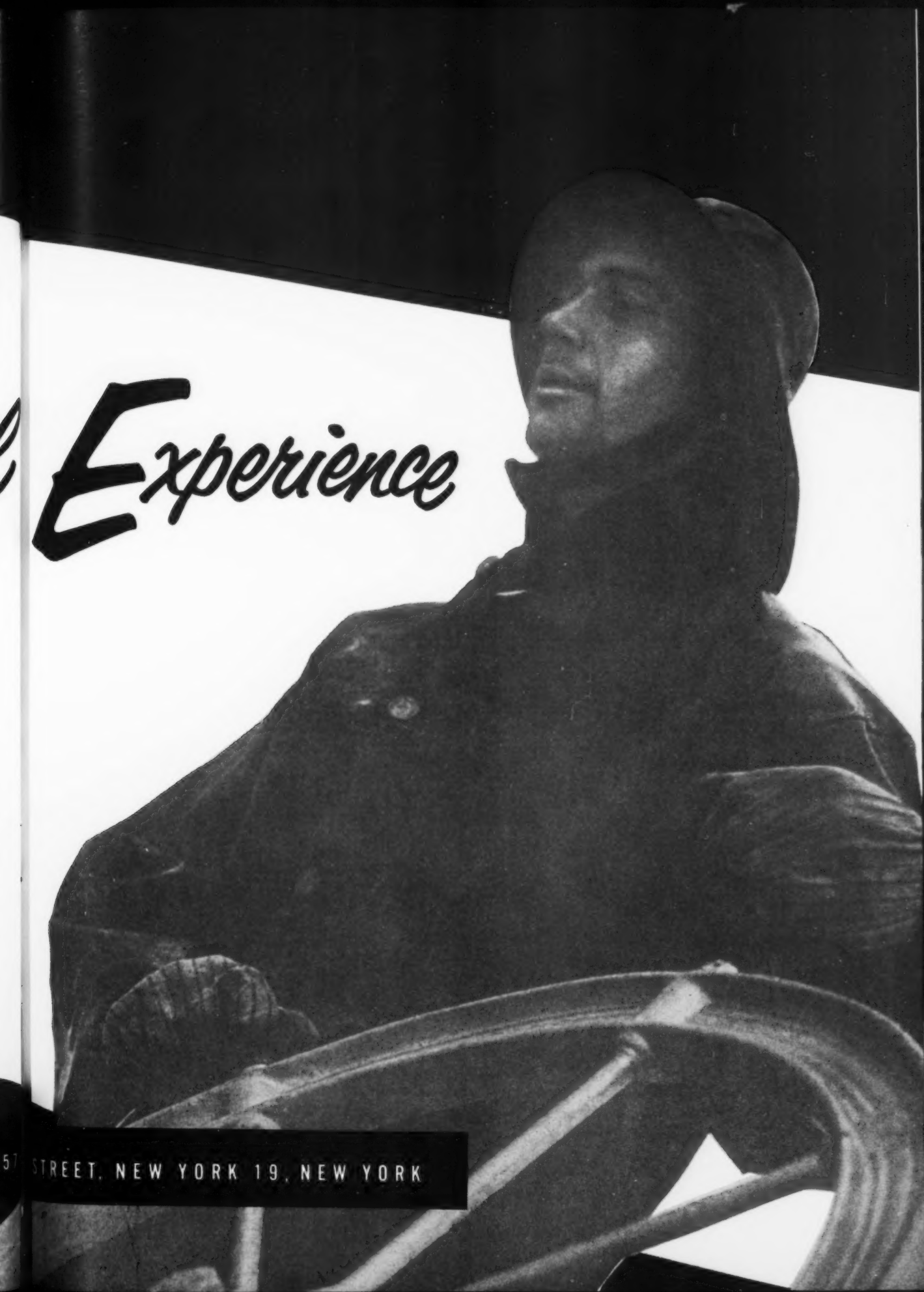
- **TEST PACKAGING**
- **VALVE RECOMMENDATIONS**
- **FILLING PROCEDURES**
- **PRODUCTION TROUBLE SHOOTING**

Although primarily concerned with matters of fragrance, VAH established this complete aerosol research laboratory to assist its customers in every phase of this new field of packaging from product formulation to pilot runs for market testing.

van Ameringen-Haebler, Inc. 521 WEST 5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STREET, NEW YORK 19, NEW YORK

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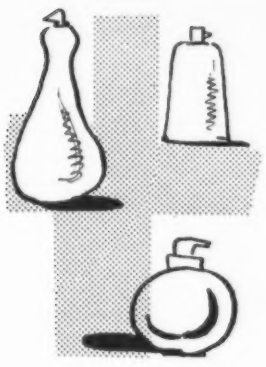
Glass and Plastic Aerosol Containers—



JOSEPH S. LANN°

THE use of glass aerosol containers in the past several years has followed the pattern of the overall, steep, historic growth of the aerosol industry in general. The 1955 CSMA aerosol survey shows the sale of approximately 10.4 million glass aerosol containers of all sizes. There is no doubt that the 1956 survey will record a substantial increase over this figure. The plastic aerosol container was still in the developmental or introductory stages in 1955 and no market figures are available for that year. Progress has been rapid during 1956, with several plastic containers now being offered. The plastic container manufacturers predict a marked increase in their 1957 sales.

Glass aerosol containers can be broadly divided into two types—uncoated and plastic-coated. The statistics on their respective sales volumes are somewhat difficult to determine, but during 1955 probably no more than about 10-15% of the total glass aerosols in the U. S. were uncoated. This proportion is reversed in markets outside the U. S., particularly in Europe, where uncoated glass containers predominate over the coated type.

The uncoated type was, historically, the first glass aerosol container to be used. For many years now, the Gebauer Chemical Co. has marketed a line of pharmaceutical aerosols in low pressure, uncoated glass containers. In 1952, the Zonite Corp. (now Chemway Corp.) introduced two relatively large (approximately 1 pint) low pressure, uncoated glass aerosol containers (mothproofer and window cleaner) which were enclosed in a cardboard tube assembly. In 1953, a number of nominally 2-oz. uncoated glass colognes were introduced, and later that year, 2-oz. plastic-coated glass containers were developed to the marketing stage. These rapid developments were aided appreciably by the ready availability of suitable nonflammable, fluorinated hydrocarbons, such as the "Freon" propellents.

Suppliers

The suppliers of glass and plastic aerosol containers are rather limited in number. The following list is perhaps incomplete; however, it covers most of the sources of supply.

The T. C. Wheaton Co., Millville, N.J., accounts for the major part of the glass aerosol container supply. They market uncoated glass containers; and are also the only marketer, at present, of plastic-coated glass bottles. The Foster-Forbes Glass Co., Marion, Ohio and the Brockway Glass Co., Brockway, Pa., manufacture uncoated glass containers. The acquisition of license rights from the T. C. Wheaton Co. for production of plastic

°"Kinetic Laboratory," E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

coated glass bottles has recently been announced by The Hazel Atlas Glass Co., Wheeling, W. Va.

Plastic aerosol containers are fabricated by:

Company	Type Resin	Stage
Colt Fire Arms Co., Plastics Div., Hartford, Conn.	thermosetting	commercial
Continental Can Co., Plastic Container Div., Chicago, Ill.	thermoplastic (nylon)	introductory
Owens-Illinois Glass Co., Toledo, Ohio	thermosetting thermoplastic (nylon)	introductory developmental
Plax Corp., Hartford, Conn.	thermoplastic (nylon)	introductory
Precision Valve Co., Yonkers, N. Y.	thermoplastic (nylon)	introductory
Injection Molding Co., Kansas City, Mo.	thermoplastic (nylon)	developmental
Royal Manufacturing Co., Prescott, Ariz.	thermoplastic (nylon)	developmental
National Plastic Products Co., Odenton, Md.	thermoplastic (nylon)	introductory
Precision Extruders, Inc., Leominster, Mass.	thermoplastic (nylon)	introductory
Wheaton Plastics Co., Mays Landing, N. J.	thermoplastic (nylon)	developmental

Advantages and Disadvantages of Nonmetal Containers

There are a number of reasons for the large use, in certain areas of the aerosol industry, of glass and plastic in place of metal containers. The next two paragraphs list probably the two most important reasons, and the following discussion lists some additional advantages and disadvantages.

1. Variability of shapes and designs.

The areas now using most of these non-metal containers are the cosmetic and pharmaceutical industries. The esthetic appeal of private mold, special shaped containers is well recognized in the sale of colognes, hair sprays, and other toiletries.

2. Absence of metal corrosion.

In the pharmaceutical industry, glass and plastics are widely used to prevent the deteriorating effect of certain metal on the biological activity of various antibiotics and other drug formulations. In all segments of the aerosol industry, glass and plastic containers are of value in packaging formulations which are corrosive to metal containers.

3. Size.

Paragraph 73.302 (a)(1) of H. A. Campbell's Tariff No. 9 (Interstate Commerce Commission Regulations) states that all aerosol containers with a total capacity of less than four fluid ounces are exempt from all shipping regulations concerning compressed gases. If the aerosol formulation is in a nonmetal container and is larger than four fluid-ounce capacity, the internal pressure must not exceed 25 psig. at 70° F. and the product must be nonflammable. These size restrictions, combined with the effect of size on bursting hazard which will be mentioned later, probably account for the size distribution in the currently marketed items, namely, the largest portion of the glass and plastic aerosol container market is made up of containers of four fluid-ounce capacity or less. If there is a need to meet the variety of larger sizes offered by metal containers, this can be accomplished with limitations, as for example, by the Chemway glass containers mentioned earlier.

4. Cost.

Uncoated glass containers are less expensive, by several cents each, than conventional steel or other metal aerosol containers. Plastic-coated glass containers are more expensive by a few cents than the steel containers. Plastic containers are priced slightly above coated glass bottles. Plastic containers will weigh less than glass containers of the same size and, therefore, offer freight savings.

5. Clarity.

It has been stated that bright, crystalline clarity is particularly desirable in cologne containers. In this respect, uncoated glass bottles have an advantage over coated glass and plastic containers. The latter types do not show off the sparkle of the cologne contents.

On the other hand, the transparency of uncoated and clear, plastic-coated glass has, in the minds of some marketers, two disadvantages. One, the visible dip tube detracts from the esthetic appeal of the package. Two, the visible liquid level required for safe fill, in some shaped containers, leaves such a head space that customers may have a feeling of being "short changed."

6. Feel.

The plastic skin on coated bottles, from its very design and function, has a relatively soft, rubbery feel. According to some comments, this rubbery feel is somewhat undesirable in aerosol cologne containers, as contrasted to the feel of uncoated glass, or possibly of molded or blown plastic containers.

7. Labelling.

The appealing shapes and the excellent examples of silk screening art found with many coated and uncoated glass aerosol colognes and hair sprays reflect great credit to the marketers of these products. Notwithstanding the fine appearance of these products, it should be remarked that glass and plastic containers are somewhat at a disadvantage as compared to metal containers in the field of graphic art. The lithographic process for metal can labelling and decoration is easier to apply and makes possible a broader use of color and design. The larger cylindrical surface area lends itself, when desired, to the use of more copy. In the case of coated glass containers, additional disadvantages may occur. Proper selection of the size and location of the necessary vent holes may, on occasion, detract from the desired artistic effect of the label. Care must be taken in drying the inked copy on plastic-coated bottles in order to avoid heat damage to the coating.

8. Soiling.

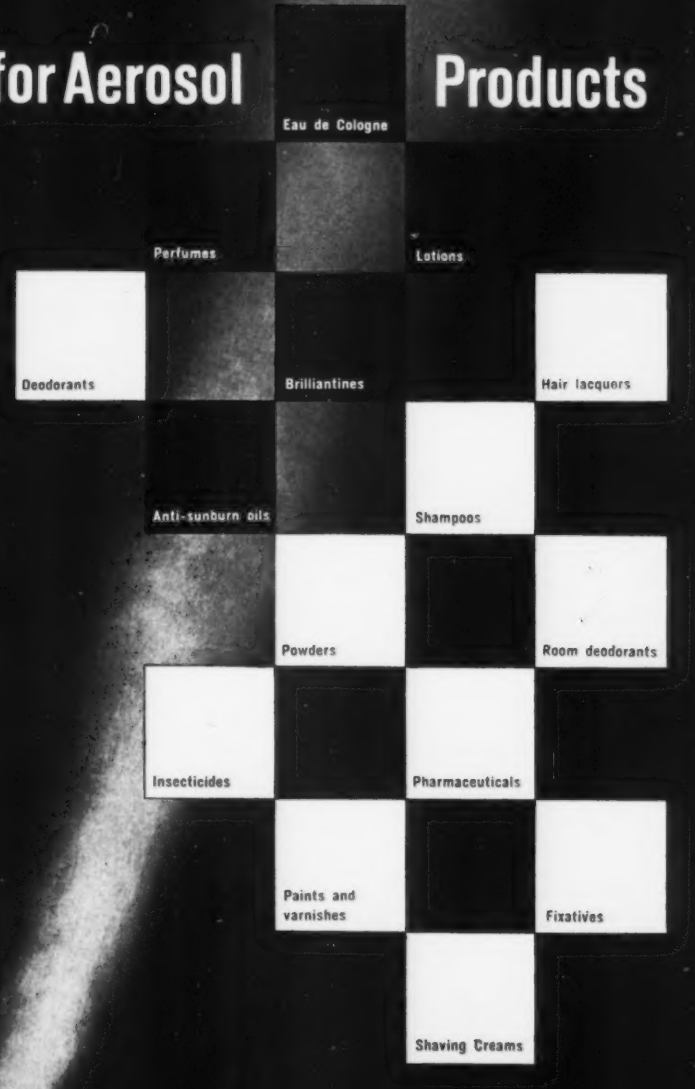
According to some observers, plastic-coated glass bottles are more susceptible to soiling in contrast to other container types. This allegation might be rationalized by reasoning that the relatively soft plastic coating could be penetrated by oily-type smudges which thereby become difficult to wipe off.

9. Handling.

Uncoated glass containers have the disadvantage that they must be carefully protected from scratches and surface abrasion. Such surface defects weaken the bottle's strength and resistance to shock. Silicone finishes have been used to improve the resistance to scratching. In any case, packing, unscrambling, and similar operations must be designed and supervised to prevent damage to the glass surface.

Coated glass containers should receive special care

P. & S. Perfumes for Aerosol Products



Polak & Schwarz Inc., 667 Washington Street, New York 14 (N.Y.)

during the closing operation when the valve ferrule is sealed against the neck of the bottle. If this operation is done improperly, the plastic coating may be cut or weakened, thereby decreasing its protective function of entrapping glass fragments in the event of bottle breakage.

The nylon container has a unique feature of allowing a nylon valve plug to be spin sealed into the neck, instead of using the conventional crimping or rolling procedure. In the new operation, the valve body is actually melt-fused with the inside surface of the neck, offering the advantage of a leakproof seal.

In most all of the glass and plastic containers, there are two common handling disadvantages. First, the filling stages are somewhat more difficult to operate in contrast to metal containers because of the comparatively small neck openings in the bottle types. Second, the various odd shapes, which make the glass and plastic containers esthetically desirable, require special modifications of the conveyor lines to hold these various shapes in place during the filling and inspection operations.

Since those containers which are under four fluid ounces are exempt from the compressed gas regulations, it has not been the practice to subject glass and plastic containers, in this size range, to the 130° F. inspection test required for metal containers. A number of loaders do, however, run certain formulations through a water bath at about 100° F. in order to detect leaks. In cases where the formulation is sensitive to heat, only random samples are tested.

10. Selective permeability.

The plastic containers, in contrast to impermeable metal and glass containers, have the property of selective permeability. There are many formulation components which have permeability rates so extremely low that leakage losses through the walls of suitable plastic containers may be considered as practically nil. On the other hand, there are certain ingredients which permeate to the extent that they cannot be tolerated in a formulation packaged in a given plastic container. Marketers of products in plastic containers should study permeability data available from manufacturers of plastic containers, and should supplement this with actual leakage rate tests on their specific formulations before commercial sales are made.

11. Frangibility.

Undoubtedly, the foremost disadvantages of uncoated glass aerosol containers is frangibility. The hazard of flying fragments projected forcibly from a broken frangible container is well recognized. This hazard is minimized by marketers of products packaged in uncoated bottles by

1. formulating and loading the product so as to keep the pressure as low as reasonably possible, and
2. keeping the size and weight of the package as small as reasonably possible.

Further comments on the hazards of frangible containers on dropping and breaking will be discussed later.

The plastic-coated glass container has three advantages over the uncoated bottle:

1. The relatively soft coating serves as a cushion to reduce the shock and chances of breakage on dropping the container onto a hard surface.

2. The coating acts as a protective skin to prevent weakening of the glass by scratches, etc. which occur in handling.

3. The coating is designed, when glass breakage does occur, to balloon out and trap glass fragments within the plastic skin, and then to collapse relatively slowly while releasing the internal pressure through suitable vent holes.

Some limitations of the coating, so far as protection against frangibility, should be mentioned. The vent holes should be large enough in size and in number and should be so located around the container to release the pressure properly without allowing actual rupture of the plastic coating. The tensile strength, elongation, resistance to bruising, etc. are properties of the plastic coatings which, if improved, would lead to even greater safety of the containers.

The thermosetting resin containers are relatively inflexible. A careful evaluation of their relative frangibility as compared to glass is not available, but it is believed that their breakage potential is considerably less than that of uncoated glass containers. These thermosetting resin containers weigh less than uncoated glass, and, from this point of view, offer a slight advantage in a somewhat decreased chance of breaking on dropping. The industry, to date, has voluntarily limited itself to sizes not larger than two fluid ounces (nominal).

The thermoplastic containers are rigid yet relatively flexible. Tests on containers blown from "Zytel" nylon resin prove there is practically no hazard of breaking on dropping.

The Chemical Specialties Manufacturers Association has, through its Aerosol Scientific Committee, set up several subcommittees to study the frangibility of glass bottles and their potential hazard on breaking.

A suggested inspection procedure, now awaiting CSMA approval, includes among its provisions:

1. for empty containers:
   a. a check of bottle specifications (volume, weight, wall and coating thickness, etc.).
   b. an inspection for surface defects (glass and coating).
   c. a pressure test with 125 psig. air.
2. for full containers:
   a. a determination of vapor pressure.
   b. water bath inspection for leaks and possible overfilling.

In order to assess the potential hazards to consumers if a frangible container accidentally breaks on dropping, a drop test procedure is being developed. It points out that the size, shape, and design have great influence on the structural strength of the bottle. The factors of drop height, nature of drop surface, internal pressure, weight, percent fill, temperature, etc. are considered. The principle of the method is based on the philosophy that a possible consumer hazard is not reflected by whether a bottle breaks per se; but, instead, is determined by whether broken fragments are projected with sufficient force to cause personal injury. To this end, test containers are dropped onto a "standard" surface which is totally surrounded by a "standard" paper enclosure. The penetration of the paper enclosure is a measure of the potential consumer hazard.

The glass bottle aerosol industry, by its conscientious regard for public safety, has a remarkable commendable history of safe performance. It is sincerely hoped that these efforts of the CSMA Aerosol Scientific Committee to standardize inspection and test methods will help maintain this excellent standard of safe packaging.

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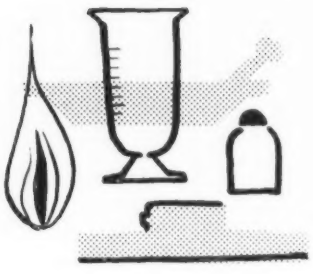
Aerosols and Safety—



H. R. SHEPHERD*

THE introduction into our daily way of life, as consumers, of the aerosol method of self-dispensing products gives one cause to reflect and take stock of the safety of such products. The modern mass exposure (limited exposure goes back to early 1900 with Gebauer Products) was ushered in by the unfortunate connotation of the term "bomb" as used during World War II, due to its shape, size and general structure. We, all of us, who have even the simplest knowledge of the functioning of this type of package know it is a package stored with energy. This dynamic characteristic which makes it unique and gives it its characteristic usefulness also causes us to respect it and concern ourselves with its safe utilization.

The writer does not profess to be an expert on the safety of aerosols in the safety engineer sense. On the other hand an intimate contact with the industry for over ten years, would seem to justify the feeling that the industry can be proud of its record of safety in the use of the end product. As far as could be ascertained there has not been a single fatality due to the physical character of an aerosol product as such. As a matter of fact, since the product is sealed, its safety may well be increased as compared to products which are packaged in the conventional manner and thereby subject to accidental ingestion or other unintended and dangerous applications. To say that there have not been accidents and property damage as a result of these products, would be inaccurate. While there has been some bodily injury and property damage—without referring to specific statistics—the writer feels that the safety record far surpasses the early expectations of all of us who have watched this industry grow and know the potential hazards of this product when developed, manufactured, or used improperly. Based on the experience of the industry in some of the known instances, we can be sure that any significant number of accidents causing property damage and/or bodily injury would not only be common knowledge to the industry, but to the whole consuming public as well and would undoubtedly have arrested the fantastic growth of this method of dispensing. It seems logical to assume that the safety record of the industry deserves the writer's foregoing comments which are put forth so strongly.

This enviable safety record didn't just happen. There are reasons for it which reflect the high integrity and technical competence of the industry and the personnel that have helped it grow. It reflects the excellent service and co-operation of the industry, through the regulatory officials who have worked in conjunction with the CSMA and its members to bring about a safety record which has laid a foundation for unprecedented consumer acceptance. It is one of the few areas of business, where as a result of the co-operation of an industry association and various regulatory agencies, regulatory procedures have been designed through government and industry experimentation *prior* to the actual setting up of the regulations. These regulations are therefore based on scientific fact arrived at jointly by industry and the regulatory officials. The American consumer would be mightily reassured to sit in on some of the industry meetings where discussions are held relative to revising regulatory standards on products, to see the searching discussions, many of them heated, in the course of arriving at sensible and practical safe-guards for the public which handles and uses these products. It is felt by many, that in some respects the industry has bent over backwards and has not permitted itself to grow with full vigor through its ultra-conservative concern for end-product consumer safety. The writer feels that in time, realistic levels of safety precautions will be reached, as we learn more about these products.

The availability, through the Chemical Specialties Manufacturers Association, of a "Manual for Vendors and Fillers of Aerosols and Pressurized Packages" is a significant safety factor. This is a handbook of information, which provides the backbone of our safety record. Quoted below is the introduction to the handbook, as well as its table of contents—under each item of contents the writer has inserted either the actual con-

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tents or where they are too long, an indication of the scope of the contents.

FILLER MANUAL

Introduction

This Manual is an assembly of recommendations, and developments of the Committees of the Aerosol Division of the Chemical Specialties Manufacturers Association, Inc. In the development of the several sections, extensive discussions and co-operation was received from the Fire Department of New York City and other large cities, the Bureau of Explosives of the Association of American Railroads, and others.

The Self Pressurized Packaging (Aerosol) Industry is developing with great rapidity. Many of those engaged in selling, filling or supplying materials are working diligently to establish sound practices within the industry.

All of the recommendations are the result of long and careful study by the committees of all phases of the industry and by consultations with many outhorities in regard to transportation, legal, and other respects. These recommendations will need frequent corrections and additions.

Vendors of Aerosols should study these recommendations and insist that they be carefully followed. Fillers of Pressurized Packages for their own sale or under contract should make certain that the basic recommendations are complied with.

Copies of this Manual are available to any company interested in the production or sale of pressurized packages.

Government Agencies are being furnished copies to be used in assisting in the proper regulation of these industries.

Contents

LABELING

"The Precautionary Labeling Committee has prepared a suggested warning label to appear on all metal aerosol (Pressurized) packages. This statement applies for metal can aerosols."

WARNING

Contents under pressure. Do not puncture. Exposure to high temperatures may cause bursting. Keep at room temperature—away from direct sunlight, radiators, stoves, hot water and other heat. Never throw container into fire or incinerator.

Note: Additional requisite cautions for statements as to hazards to person and property, the safe discharge of contents, etc. will depend upon the particular product.

Type Size: "Use a size that will be prominently legible compared with other printing. Locate all 'warning' statements on the front panel or above the directions for use. Small type and side panel use is not recommended.

Other Information: "All other information required by law on the label should be complied with such as the Federal and State Pesticide Acts, Net Weight Laws, etc."

PREMARKETING PRODUCT CHECK

Pre-Marketing Check List: "The design of the check list assumes that various marketing questions have been answered and that the management of the company has decided to go ahead with the development and marketing of the product. This master check list, of necessity, refers to the broad base of all Aerosol and Aerated products and is meant to be applicable to all those currently produced and new products under development."

FILLER SAFETY MANUAL

By Aerosol Scientific Committee. "An informal safety method for those who are now filling or plan to fill low pressure pressurized products either in the laboratory or in production." (Covers safe handling of material components, mechanical equipment and operations incident to aerosol filling.)

FLAMMABILITY & COMBUSTIBILITY

Flammability Tests of Self-Pressurized Containers: The Test Methods for Checking the Flammability of Self-Pressurized Dispensers, given herewith were adopted as official at the June, 1952 meeting of the C.S.M.A.

MINIMUM FILLS

"Minimum Commercial filling of Self Pressurized Packages offer many problems. Special committees of C.S.M.A. are constantly studying these problems. There will be constant additions to this list."

AGENCIES & REGULATIONS

Of Interest to the Pressure Packaging Industry: (Separate looseleaf note book—for purchase from C.S.M.A)

"An attempt was made to include all agencies and all regulations which had been called to the attention of the committee. Obviously, these organizations can accept no responsibility for this compilation since final authority, of course, is the official regulations."

COMPILATION OF ECONOMIC POISONS LAWS

"A comprehensive looseleaf book of Federal and State Economic Poisons Laws and Regulations. Any vendors claiming insecticidal, fungicidal or germicidal properties for a product will require this reference work. Copies may be purchased from the C.S.M.A. office."

LABORATORY SERVICE

Lists items to be covered in Laboratory reports on aerosol products.

AEROSOL LIQUID DENSITIES

"Methods recommended by the Aerosol Division Scientific Committee." (Two methods)

MAILING AEROSOLS (Limited excerpts from Postal Regulations)

Within certain limits all aerosols meeting I.C.C. specifications can now be mailed. Other products of our industries can now have mailing services. Most of the responsibility is left with the sender, who is held strictly accountable for sending non-mailable matter.

(End of C.S.M.A. Manual for Vendors and Fillers of Aerosol and Pressurized Packages.)

Another manual of interest specifically relating to aerosols is published by the Manufacturing Chemists' Association, Manual L-1 "Warning Labels."

In closing the writer would like to urge wholehearted support of the activities of the various committees of the C.S.M.A. Aerosol Division and their co-operative work with the various regulatory agencies. Active participation by all parties in the discussions of new situations as they arise will result in decisions which reflect the thinking of the whole industry and which can be brought to bear effectively, to assure the continuance of our excellent safety record.

Perfumers' Problems in the Manufacturing of Aerosols—

ERNEST SHIFTAN*

PERFUME oils are used in aerosols either for the purpose of atomizing perfumes and toilet waters or they are used to scent functional products such as creams, powders, hair lacquers, anti-sunburn oils, deodorants, shampoos, room sprays, etc. They are also used simply to overcome unpleasant odors present in the basic raw materials employed in the manufacture of some aerosol products.

To give a general idea of some of the problems which occur when perfume concentrates have to be recommended for an aerosol package, I will mention some of the difficulties which have to be overcome. During the last few years, a tremendous amount of experimental work has been done to find out which fragrance products, that is mostly essential oils, chemical aromatics, resins and animal tinctures, are compatible with the different propellents.

The greatest difficulty lies in the insolubility of some of the aromatic chemicals in the propellents. Hundreds of experiments have been made to find out which products are not soluble, but this knowledge helps only partially and is not an over-all answer to the problem. If we have a well rounded perfume and are asked to make a version for aerosol, the replacement of the non-soluble materials very often destroys the balance of the perfume. The most insoluble products are tinctures of animal and plant origin. For example, Tincture of Ambergris, Civet and Castoreum tend to produce deposits after standing a few days in a solution of alcohol and propellent. Also, tinctures of Tonka Beans, Vanillin and Oakmoss and other resins are liable to have the same effect. Another group of aerosol propellent insoluble products are Resinoids and Extracts from gums and resins. Benzoins, Peru Balsam, Tolu Balsam, Myrhh, Olibanum and Labdanum are only a few which, can be mentioned. The replacement of these resins with the corresponding essential oils, distilled by steam or vacuum from those gums and resins is not always satisfactory because they have a different odor when they are liberated than when they are still in the gum. A perfumer has to do a great deal of work before he gets back his original fragrance. His work can be made easier if he has raw materials at his disposal which have specially been made soluble. We have found that if we use only 35% propellent, 1 to 10% perfume oil and the rest alcohol in a mixture, the solubility of many products increases. Admittedly, this formulation approach to the problem has a number of drawbacks.

Another way to get a clear aerosol solution for a given fragrance, is filtration during cold filling. It is possible to cold fill in one stage, a mixture comprising the perfume, alcohol and propellent. The low temperature reached by the liquid will shock out any of the materials which are insoluble in the prepared mix, which then can be passed through a filter which is an integral part of the filling line. If necessary, one filter can be placed in the line immediately after the mixture leaves the chilling unit and another filter can be placed in the line just before the mixture enters the filler. This will remove the insolubles which have been thrown out of the solution and will almost always assure a sparkling, clear finished aerosol. When using this filling method, a preliminary test should be performed in the laboratory and the finished aerosol fragrance checked by an experienced perfumer to make sure that the finished aerosol has the correct odor quality.

Besides the solubility difficulties it is often mentioned that certain perfumes present color change problems and that the perfumer has to resort to changes in his formula and has to use similar smelling derivatives of the original products. As a matter of fact, the color problem is the same as in non-aerosol products. There are present in many aerosol fragrances the same raw materials which cause darkening in ordinary perfumes, colognes, creams, shampoos, etc., and they may cause discoloration in aerosol items. Actually, the contrary situation exists to some extent—by using the modern opaque bottles the concern about discoloration of alcoholic toiletries in aerosol form is much less than in flint glass bottles without propellent. If a cream or any other cosmetic product is concerned then we have to make sure that the perfume oil does not discolor it, because even if the

*van Ameringen-Haebler, Inc.

cream is invisible in the opaque container a dark color on the skin after it is applied would not be acceptable.

One of the most important differences between the odor of a perfume oil in ordinary alcoholic solutions of varying strengths (used as a perfume or a toilet water), and the same perfume oil used in an aerosol, is that the moment the perfume is atomized or sprayed on the skin, a much quicker evaporation takes place than in an ordinary, non-aerosol product. It is clear that the evaporating propellent draws along some of the lighter notes of the perfume and we have the impression that we smell a much flatter perfume or that the end note of the perfume comes out too harsh. This comparison is true, most particularly, in colognes, where the addition of water to the non-aerosol type, has an evaporation retarding effect on the alcohol and the perfume oil, which is just the opposite of the too rapid evaporation effect found in the aerosol package, which is usually water free. For this reason, if an existing perfume has to be worked into an aerosol, the top note has to be increased and the middle note has to be prolonged to counteract the above mentioned effect. Here the perfumer has a great deal of work to do and has to check his product on the skin of different persons. It will be especially observed that aerosol colognes react differently on various skins. This may be caused by contrasting temperatures or variations in skin chemistry. If an originally well rounded cologne falls apart when applied from an aerosol package, the perfumer must change his proportion of ingredients. It has been found that the increase of weak smelling aromatics will help to overcome these disturbances resulting from the increased evaporation rate of the aerosol packaged perfume or cologne.

Another problem is the adjustment of the top note of the perfume to overcome the light disagreeable head note of the propellent. Although the propellent firms are making cleaner and less odorous propellents they still have a chloroform like note which can be sensed in the first spray of a perfume, cologne or room spray. I do not think that specific aromatic products or essential oils can be recommended to overcome this undesirable odor. I believe that this problem can only be solved by blending the top note of the perfume accordingly. Many experiments are often necessary until the proportions for the compound are found which give the user of the aerosol perfume the feeling that the propellent of the perfume is an odorless gas.

After all the problems have been solved and the perfume is clear, soluble and has the desired odor, the product should be shelf-tested to make sure that later on nothing will happen. A shelf test of six months is generally sufficient and can be accompanied by an accelerated oven test of one week for which a temperature of 130° F. is required.

By observing many aerosol perfumes for a period of years, I have found that in most cases the same fragrance is better preserved in an aerosol than in an ordinary perfume or cologne. In an ordinary toilet water, the addition of water speeds up the oxidation of the various aromatic ingredients. This is inhibited in the aerosol package, due to the fact that air is not present, and oxidation of the perfume materials cannot take place. For this reason, I also suggest that perfumes which require a few weeks of aging before they develop their desired fragrances, should be aged in alcohol alone before they are packaged with propellent.

There is undoubtedly a great future in store for fine aerosol odors because perfume is at its best when it can be atomized on the skin.

A few words should be added concerning the perfumer's problem for room sprays. A room spray should be strong and sparkling so that a small vaporization into the air diffuses into as much volume as possible. The odor itself must not be too distinctive because the repeated use of the room spray should relax the household inhabitants and not harass them. For the same reason it should be refreshing without turning into sweetness or heaviness. The most common types for room spray are Lavender, Citrus mixtures, Pine or light flowery notes and also spicy notes. Light sophisticated perfumes have also been marketed successfully.

Practically all the functional non-cosmetic type products packaged as aerosols carry at least a small percentage of perfume oil either to cover the odor of the active ingredients or to serve a positive functional purpose in their own right (as in air deodorant sprays). Over a period of time certain approaches to the problem of perfuming the more or less routine products in this group, such as insecticides, have been developed. However, this is the field of perfuming, that while not so elegant as that of the fine cosmetic perfumes, is frequently a greater challenge to the perfumer's art. Since they are additives rather than principal ingredients, the odor materials must fall into a low price, low concentration, high effectiveness bracket. Concentration as low as .05% (based on total container contents) of odors selling for one or two dollars per pound or even less are not particularly unusual, although for a real plus odor value greater challenge to the perfumer's art. Since they are necessary. When aerosol base materials of a type for which there is no background are presented for odorizing, only great skill and ingenuity on the part of the perfumer will make possible a satisfactory result. There are no hard and fast rules which can be applied to this type of perfuming. Each new product is individual and the only approach to the problem is to perfume and shelf test and perfume and shelf test until the goal is reached. It follows, of course, that the more experience of this nature a perfumer can bring to bear the more directly and effectively he can solve the problem.

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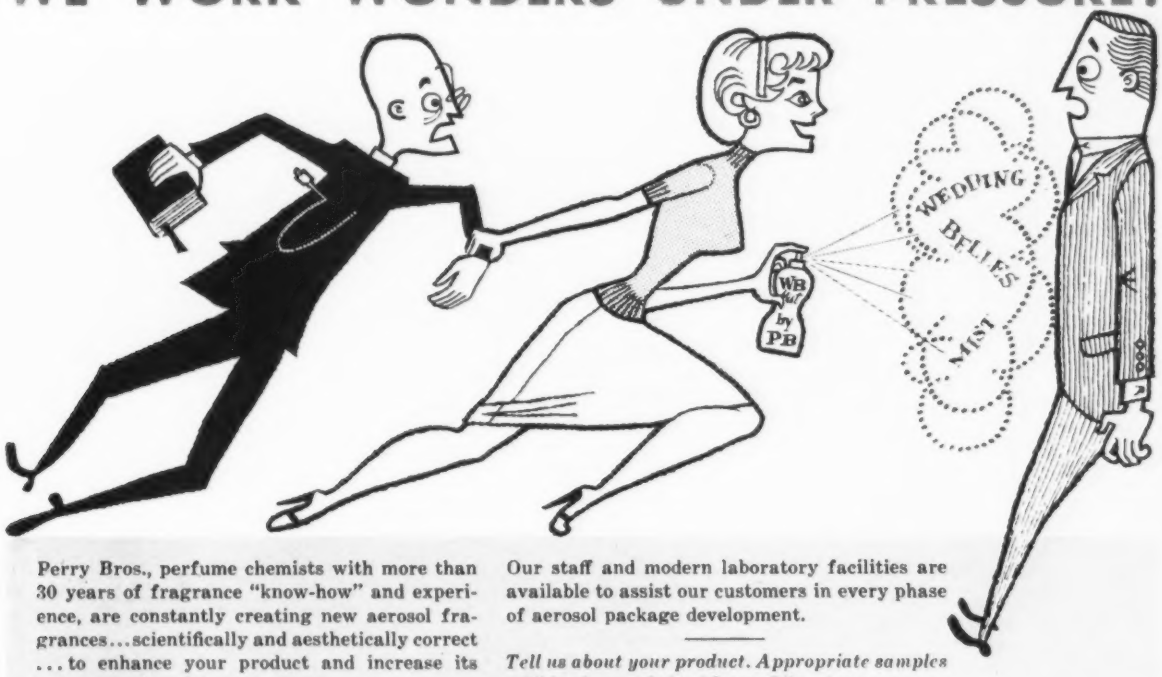

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New PRODUCTS & IDEAS

ELECTRON MICROSCOPE—1

North American Philips Co., Inc. has produced a new 100 Kv electron microscope with such features as a hinged objective lens for quick change or cleaning of pole inserts, magnetic compensator, objective diaphragm with multiple apertures and insert screen with binoculars for ultra-thin specimens. Camera equipment extends the upper magnification limit to 200,000, with operating magnification level indicated directly on a panel meter. Micrographic facilities include a 35 mm camera which permits 36 exposures on standard film. It is housed in a 3-section cast aluminum cabinet that is 58 inches long, 34 inches deep and 46 inches high. It operates on single phase a.c. and can be furnished for voltages ranging from 110 to 440. Various accessories are available.

POLYETHYLENE CONTAINERS—2

The Werner Manufacturing Co. says that its polyethylene containers are available in a range of types and sizes for permanent packaging of fine products. The producer says that virtually any color can be used; panels can be plain or stippled; names or designs can be embossed, hot stamped with foil or imprinted on the cover panel. They are supplied in standard sizes or made to fit specific requirements. The base, cover, hinges and fastener are molded as a unit. Interior partitions, slots, supporting "cradles" and threaded posts can be furnished.

MAGNETIC STIRRER—3

The Fisher Thermix is designed to cut hours from a host of routine stirring, mixing and dissolving operations, says the Fisher Scientific Co. The instrument is a hot-plate magnetic-stirrer combination which according to the manufacturer is unusually effective because it offers the advantages of magnetic stirring (vacuum and controlled-atmosphere systems, gentle agitation without splash, reaction flasks free from propeller shafts) in combination with a hot-plate. The hot-plate and stirrer can be operated independently or simultaneously.

CHROMATOGRAPHY INSTRUMENT

Podbielniak, Inc., manufactures a series of instruments which combine the principles of fractional distillation and vapor-phase chromatography for the separation and analysis of any gaseous or vaporizable liquid mixture. The Thermocon does low-temperature distillation analysis; the Hyper-Cal does high-temperature distillation; and the Chromacon, the vapor-phase chromatography instrument, permits the analysis of small samples of almost any gaseous or liquid mixtures, says the manufacturer. Combinations of these three analytical methods permit maximum flexibility and utility, according to Podbielniak.

SKIN PACKAGING

Robert Gair Co., Inc. says that its skin packaging technique offers substantial protective and merchandising advantages. A small product is placed on a sheet of finely perforated boxboard and covered with a transparent plastic film. The film is softened by the application of heat, and a vacuum is created under the boxboard, which draws the film tightly around the product and against the surface of the boxboard, on which a special adhesive forms a bond between the film and the board. The result is said to be a package in which the product, clearly visible through the film, is protected by the boxboard's rigidity as well as enhanced saleswise by the appeal of printed design on the board surface.

PACKAGING ADHESIVE

Rubba, Inc. has announced the development of No. 347 Rubbatex, which it says is the first suitable adhesive to bond plastic bubbles to paper or cardboard on assembly lines. The manufacturer recommends it as an aid in the packaging of cosmetics and other products.

1.

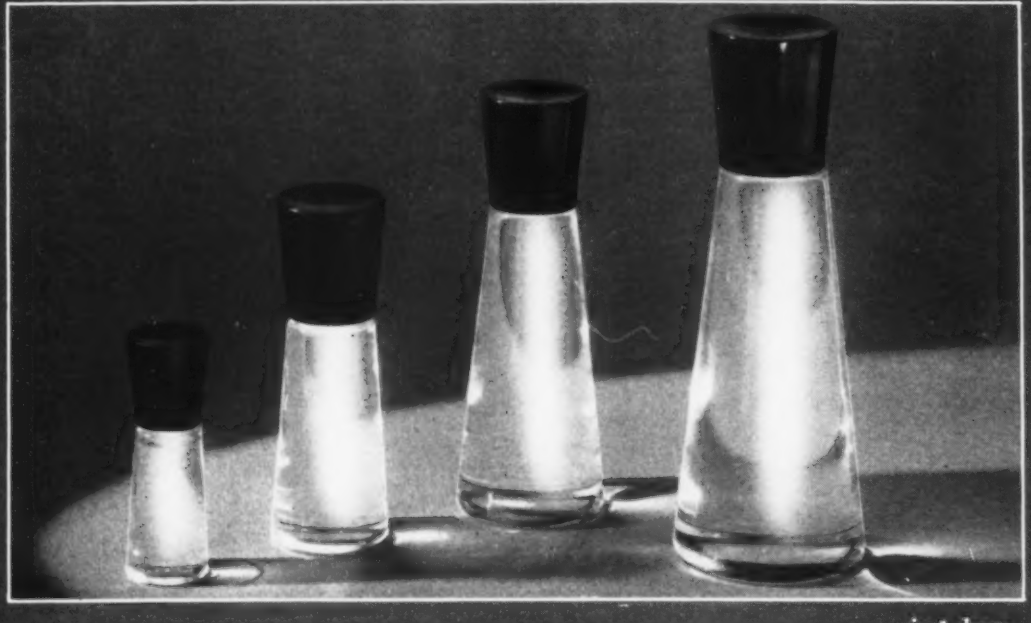
2.

3.

Presenting the NEW exquisite

with the new FUTURA CAP, shown in black—also comes in brilliant GOLD-COTE... bright touches of elegance for the purse or boudoir.

RICHFORD SPILLPROOF* PERFUME FLACONS



in 1 dram, ½ ounce, 1 ounce, and 2 ounce sizes

Observe the beautifully angled silhouettes of these EXQUISITE new perfume bottles, and note the perfectly blending FUTURA caps. When you consider that each is fitted with the fabulous SPILLPROOF feature, you can understand why we are so enthusiastic about them.

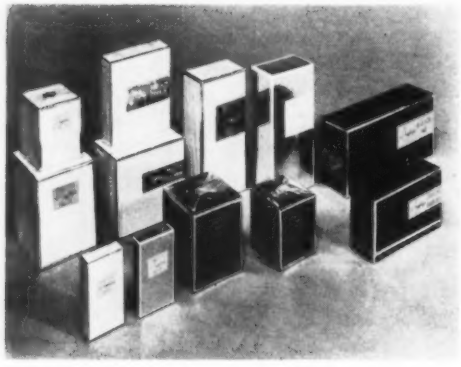
Write now for samples and prices.

Spillproof perfume bottles are the magic perfume containers that have launched millions of sales slips — their customer appeal and proved acceptance will help the sales of your product.

RICHFORD CORPORATION

Office & Plant: 3618 Oceanside Rd., Oceanside, N.Y.
Show Rooms: 350 5th Ave., New York

Packaging and Promotion



1.

1. ANGELIQUE

Angelique & Co., Inc. has redesigned its fragrance packaging, using an overwrap of cellophane, both to add to sales appeal and to protect the silk screened boxes. Olin Mathieson Chemical Corp. supplied the Olin Cellophane overwrap.

2. E. R. SQUIBB

E. R. Squibb & Sons are using a new tube manufactured by the Bradley Container Corp. for its Brushless Shaving Cream. The Bracon tube is said to eliminate cracking and retain shape and product identity from full to empty. It is printed in brown and red on white polyethylene and is topped with a red urea, "fez" shaped cap.

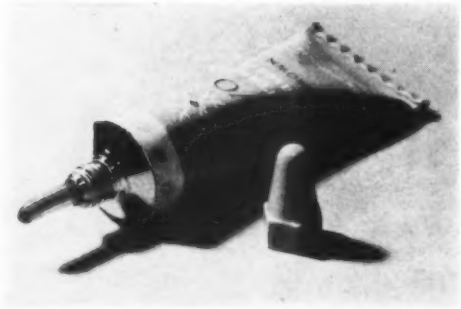
2.

3. AVON

The cream mascara of Avon Products, Inc. comes in a new one-fourth ounce tube developed by Wheeling Stamping Co. It has a molded plastic tip as an integral part, which is claimed to eliminate the possibility of metallic dust or slivers from coming into contact with the eye.

4. HARRIET HUBBARD AYER

Color Rinse Plus Creme Conditioner is presented by Harriet Hubbard Ayer in six shades. The product is a combination temporary liquid color rinse and conditioner. In a special introductory offer an eight ounce bottle and a plastic applicator bottle are packaged together at a special price of $2.



3.

5. McKESSON & ROBBINS

In the miscellaneous personal products category of the 1956 Aerosol Package Contest held at the annual convention of the Chemical Specialties Manufacturers' Assn., the winner

4.

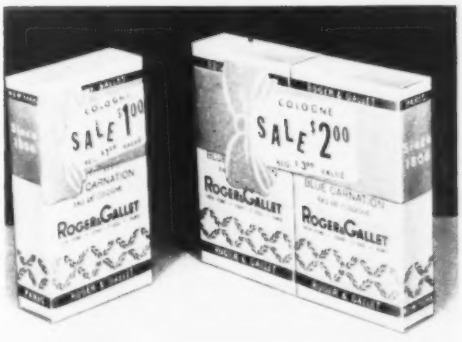
5.

6.

was Tartan suntan foam, from McKesson & Robbins, Inc. It is packaged in a 6-ounce drawn can produced by Crown Cork & Seal So.

6. NORTHAM WARREN CORP.

Cutex Hand Cream is available in a new plastic tube made of extruded polyethylene which is internally coated to enable the product to retain its fragrant perfume and protect other ingredients, says the manufacturer, Northam Warren Corp. It is said not to dent, tear, corrode, crack, crush, break or leak. It retails for 43 cents plus tax and comes in a one dozen counter display



7.

7. ROGER & GALLET

First Roger & Gallet promotion of 1957 features cologne in the 1.7 ounce size. Two bottles are banded together with a shocking-pink bow-band announcing the double package as a $3 value for $2. The single package is similarly banded as a $1.50 value for $1. Four fragrances are available at the special price: Blue Carnation, Fleurs d'Amour, Sandalwood and Violette de Parme.

8.

8. HELENA RUBINSTEIN

Helena Rubenstein's tenth consecutive annual sale of hormone preparations is being held from December 26 through February 28. Featured are two combination packages: one contains a 2-ounce Estrogenic Hormone Cream and 1-ounce Estrogenic Hormone Oil, priced at $3.50; the other has the cream and the oil plus Silk-tone Special with Hormones, and costs $5.

9. COTY

Coty packages its deodorant and anti-perspirant in a Twistick container, which lowers or raises the stick with a turn of the base. It's advertised as delightfully scented and non-acid so as not to irritate skin or damage fabrics. The price is $1.10 plus tax.

9.

Flavor Materials

PRODUCTION IN 1955

The data concerning production and sales of flavoring materials for 1955, classified as benzenoid, and naphthalenoid; terpenoid, heterocyclic, and alicyclic; and acyclic groups are analyzed

MORRIS B. JACOBS, Ph. D.

THE UNITED STATES Tariff Commission relatively recently issued its Report No. 198 Second Series, "Synthetic Organic Chemicals—United States Production and Sales, 1955 (GPO Cl. No. TC 1.9: 198). This report, as those which preceded it, contains three major parts and an appendix. Part I is concerned with the production and sales of tars, tar crudes, and crudes derived from petroleum and natural gas.

Part II is concerned with the production and sales of intermediates and finished synthetic organic chemicals by major groups. One of these major groups is that of flavors and perfume materials and this is the part that concerns us here.

Part III contains an alphabetical list of individual products by groups and the names of manufacturers. This section of the report also contains information relating to flavor and perfume materials.

Appendix C contains a glossary of the common or trivial names of certain intermediates, among which are included some flavoring materials, as used in industry and their equivalent standard or *Chemical Abstract* names.

Production and Sales

The report of the Tariff Commission covers the production and sales data of flavor and perfume materials derived from natural products by actual chemical processing and those materials derived from coal tar. It does not contain data on purely natural products such as floral essences, essential oils, and other materials obtained by simple extraction or by distillation from natural vegetable and animal sources. It was prepared by James H. Hibben, Henry O. Parsons, Deborah K. Emory, Frank Gonet, Pauline T. Eno, and other members of the staff of the Tariff Commission.

For the purposes of the Tariff Commission report and also for the purposes of this review, the flavor and perfume materials are grouped depending on their chemical structure, as either cyclic or acyclic substances. The cyclic substances are further subdivided into (a) benzenoid and naphthalenoid substances and (b) terpenoid, heterocyclic and alicyclic substances.

As I pointed out in my review of the 1954 data, it is regrettable that for a number of important flavor and perfume materials such as vanillin and ethyl methylphenylglycidate (ethyl alpha, beta-epoxy-beta-methylhydrocinnamate) it was not possible for this agency to present any data. It is also regrettable to note that the marked reduction in the number of chemicals for which data was presented in the past has been continued. Thus for 1953 data was presented for 71 synthetic chemicals; for 1954, data for 47 individual compounds was presented; but in the 1955 report data are given for only 41 compounds. Many of the compounds omitted, however, are those made in smaller quantity. In general, the data presented depends upon the cooperation of the industry.

The quantity of sales in 1955 totaled 36 million pounds, valued at 53 million dollars compared with a sale of 31 million pounds, valued at 47 million dollars in 1954, representing an increase in sales and value of sales of 5 million pounds and 6 million dollars in 1955 over 1954.

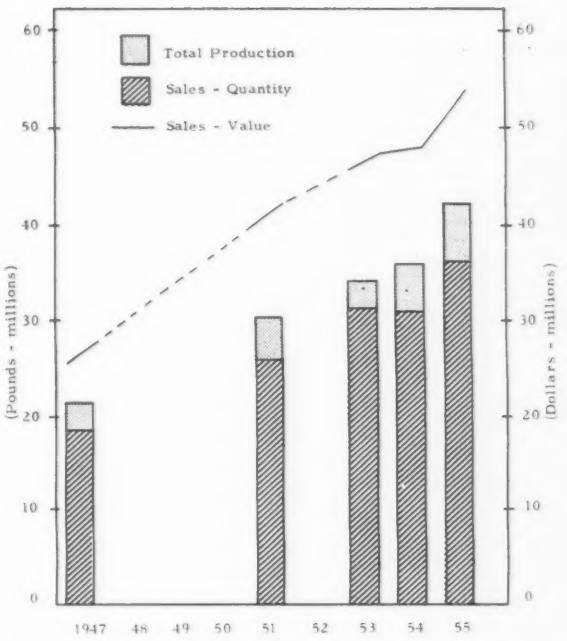
The production of flavor and perfume materials in 1955 reached 42 million pounds which was an increase of nearly 19 per cent over the 35 million pounds produced in 1954.

The increase in production, sales, and sales value

from 1947 through 1955 is given in the table and figure.

Year	Production	Sales	
	Pounds	Pounds	Dollars
1947	20,879	17,896	26,062
1951	29,806	25,308	40,499
1953	33,871	31,080	46,528
1954	35,307	30,794	47,280
1955	41,974	35,843	52,555

Synthetic flavor and perfume materials production and sales in the United States 1947-1955 in thousands (U. S. Tariff Commission data).



Synthetic flavor and perfume materials production and sales 1947-1955 in the United States in millions. (U. S. Tariff Commission data).

Benzenoid Compounds

The production of benzenoid and naphthalenoid flavor and perfume materials in 1955 was 14 million pounds representing an 11.8 per cent increase over the 13 million pounds manufactured in 1954. Sales of the benzenoid and naphthalenoid groups totaled 12.7 million pounds, valued at 16.1 million dollars in 1955 as compared with 11.0 million pounds, valued at 14 million dollars in 1954.

The substance produced in greatest amount in this group of aromatic chemicals and having the largest sale was artificial oil of wintergreen, that is, methyl salicylate. In 1955, the production of this compound totaled 3.1 million pounds an increase of 8 per cent over that produced in 1954 which was 2.9 million pounds. Sales of methyl salicylate totaled 3.4 million pounds valued at 1.6 million dollars as compared with 2.8 million pounds valued at 1.3 million dollars in 1954. It is to be noted that the production of methyl salicylate in 1955 was still under that of 1953 when 3.2 million pounds were produced.

Information is given only for 17 compounds of the benzenoid and naphthalenoid group in 1955 data as compared with 19 in the 1954 data and 26 in the 1953 data. In order of magnitude, the production in pounds was: methyl salicylate (3,130,000), anethole (1,397,000) (representing a marked increase over the 934,000 pounds produced in 1954), phenethyl alcohol (1,100,000), benzyl alcohol (514,000), benzyl acetate (432,000) (representing a drop from the 624,000 produced in 1954), alpha-cinnamaldehyde (280,000), anisaldehyde (196,000), eugenol (133,000), benzyl salicylate (57,000), methyl cinnamate (54,000), phenethyl acetate (49,000), isobutyl phenylacetate (33,000), hydrocinnamic alcohol (16,000), benzyl cinnamate (6,000), and benzyl propionate (4,000). No production data are given for benzyl benzoate and isoeugenol but sales of 172,000 and 82,000 pounds respectively are noted.

All other benzenoid and naphthalenoid materials manufactured for flavor and perfume purposes totaled 6,851,000 pounds. The total production for all cyclic compounds was 24,116,000 pounds of which 14,252,000 were in the benzenoid group and 9,864,000 pounds were in the terpenoid group. The Tariff Commission was able to report statistics on only 11,254,000 pounds (markedly less than for the 13,165,000 in 1954) and was unable to give individual data for 12,862,000 pounds of cyclic compounds (markedly more than for the 8,705,000 for which it was unable to give data in 1954).

Terpenoid Compounds

Data on production in the 1955 report is given for 21 compounds as compared with information for 23 compounds in the terpenoid, heterocyclic and alicylic group. The 1953 report carried information for 33 compounds. The production of this group of flavor and perfume materials was 9.9 million pounds in 1955 compared with 9.1 million pounds in 1954, representing an increase of 8 per cent. Sales of the terpenoid, heterocyclic, and alicyclic compounds were 7.5 million pounds valued at 14.8 million dollars in 1955. In 1954 sales totaled 7.2 million pounds at a value of 12.8 million dollars.

The most important aromatic chemicals in volume of production in the terpenoid category were the terpineols, alpha-, beta-, and alpha-beta-terpineol. The production of these compounds totaled 2.5 million pounds as compared with 2.48 million pounds in 1954. Sales were 2.3 million pounds valued at $576,000. The most import compounds in this group from the point of view of value of sales were the synthetic mentholds; 261,000 pounds of these substances were produced (a sharp drop from the 364,000 pounds made in 1954); sales totaled 274,000 pounds valued at $1,643,000, and geraniol, 462,000 pounds made and 427,000 pounds sold at a value of $1,186,000.

Other important aromatics in this category were: piperonal of which 307,000 pounds were produced, and 272,000 pounds valued at $981,000 were sold; methylio-

FLAVOR SECTION

nones, 205,000 pounds produced, 180,000 sold at $960,000; ionone, 266,000 pounds produced, 198,000 sold at $716,000; hydroxycitronellol, 116,000 pounds made, 123,000 pounds sold at a value of $702,000; and citronellol, 201,000 pounds produced, and 193,000 pounds sold at a value of $673,000.

Data on production of other compounds in the terpenoid, heterocyclic, and alicyclic group were the following (production over 100,000 pounds): safrole (315,000), terpinyl acetate (306,000), citronellal (152,000), and linalyl acetate (115,000).

Compounds in this group for which the production was over 10,000 pounds were: linalool (85,000), citrol (46,000), cedryl acetate (39,000), geranyl acetate (29,000), and vetivenyl acetate (10,000). Compounds in the terpenoid, heterocyclic, and alicyclic group for which the production was less than 10,000 pounds were: rhodinol (9,000) and geranyl formate (5,000).

All other terpenoid, heterocyclic, and alicyclic materials, including chemically modified essential oils production amounted to 4,403,000 pounds with 2,778,000 pounds sold at a value of $5,368,000. These data can be compared with those of 1954 when 3.3 million pounds were produced of which 1.96 million pounds were sold at a value of 4.2 million dollars. These data are actually comparable since individual data is carried for 21 compounds in the 1955 report and for 23 in the 1954 report.

Acyclic Compounds

Production of flavor and perfume materials in the acyclic group totaled 17.9 million pounds in 1955, almost 33 per cent more than the 13.4 million pounds made in 1954. Practically the entire increase was attributable to the increase in production of monosodium glutamate, namely, 16.5 million pounds in 1955 as compared with 12.8 million pounds in 1954. The production in 1955 was even greater than that of 1953 when it totaled 14.7 million pounds.

Sales of the acyclic group amounted to 15.7 million pounds at a value of 21.6 million dollars as compared with 12.6 million pounds valued at 20.5 million dollars in 1954. The production of monosodium glutamate amounted to about 92 per cent of the total weight produced in the acyclic group. Some 14.7 million pounds of monosodium glutamate were sold at a value of 20.8 million dollars. Thus the value of monosodium glutamate exceeded the value of either the entire terpenoid group or the benzenoid group and was equivalent to about 67 per cent of the total value of both of them.

Data are given for three other compounds in the acyclic group, namely, ethyl butyrate of which 150,000 pounds were made and 147,000 pounds were sold at a value of $102,000; isoamyl butyrate (amyl butyrate), 32,000 pounds made, 28,000 pounds sold at $21,000; and allyl caproate 5,000 pounds produced, and 4,000 pounds sold valued at $9,000.

Individual statistics were not presented for compounds in this category whose production totaled 1.2 million pounds. Some 800,000 pounds of such products were sold at a value of $623,000.

John Bouton Heads D&O Flavor Department

John Bouton, formerly chief flavor chemist for Synfleur Scientific Laboratories, has been appointed Director of the

John Bouton

Flavor Department of Dodge & Olcott, Inc. A veteran of 22 years in the industry, Mr. Bouton has also been associated with S. B. Penick Co. and is a member of the Society of Flavor Chemists and the Institute of Food Technologists. In his new position, Mr. Bouton will work from the company's main offices in the Dodge & Olcott building in New York City where the flavor laboratories are located.

Charles E. Hires Co. to Market Ginger Ale

Charles E. Hires Co., maker of Hires root beer, is in the process of launching a ginger ale, which will be sold under the name Prurock. Other flavored drinks have been developed by the company, but are not yet marketed.

Harold L. Janovsky Joins Fritzsche Brothers, Inc.

Harold L. Janovsky has been appointed chief flavor chemist of Fritzsche Brothers, Inc. He replaces Dr. Edmund H. Hamann, who has retired. Mr. Janovsky is a member of the American Chemical Society and the Institute of Food Technologists, as well as the Flavoring Extract Manufacturers of the U. S. and the Society of Flavor Chemists. He has contributed significantly to the technical literature of the industry and has served in many of its scientific activities.

Mr. Janovsky's prior affiliaitons include Dodge & Olcott, Inc.; Virginia Dare Extract Co.; Seeley & Co., Inc.; and Aroscent, Inc.

Trade Literature

Neumann, Buslee & Wolfe, Inc. has issued a new catalogue containing a wholesale price list of its products, which include certified food color, concentrated flavors, aromatic chemicals, perfume concentrates, essential oils, spermaceti, beeswax and gums.

Dragoco, Holzminden, Germany, has a new publication on its 1956/57 price list, in German. A complete listing of the essential oils, aromatic chemicals and perfumery raw materials produced by the firm are listed, and the brochure is amply illustrated with photographs.

Plastic Laboratory Supplies is the title of a catalogue from Palo Laboratory Supplies Inc. A variety of instruments, from test tubes to hand pumps, in polyethylene, polyurethane, polyvinyl and nylon plastics are described and illustrated.

AEROSCRIPTS

Jack Pickthall

AEROSOL FIGURES IN EUROPE

It is a hard fact that European readers obtain comprehensive information on practically all aspects of U.S. aerosol production but that precious little reciprocal information goes back to the States. I am always envious of the official information on the sales of a given product which appears in American journals and regret that few such figures are available in Europe.

In England, a Board of Trade production census for 1951 was published in 1955 and this covered toilet preparations and perfumery, soap, candles and glycerin. Needless to say the word "aerosol" was conspicuous by its absence. This emphasizes just how difficult it is to discuss aerosol production figures and trends in this part of the world. In fact, only by approaching the most important fillers, can, bottle and valve makers and trying to piece together the information received, can one arrive at any conclusion. I have been fortunate to be given 'inspired guesses' by several people in a position to see a pretty clear picture of the situation.

The steep climb in the number of aerosol units sold in America since 1951 and which we understand will top 270 millions this year, is inspiration itself.

I very much admire the overseas survey of the *Aerosol Age* (September 1956) where some of the difficulties which face European producers are discussed. I could say a few words on their 'crack' about people who drive on the left-hand side of the road but refrain in view of the nice compliment about the complexions of our women. Dr. Clark is not quite up to date on our propellant supply position. We (in the U.K.) import American and Italian products but there are in fact two producers in England. His revised estimate of 6 millions for 1955 U.K. sales must be pretty near the mark and his suggestion of eight or nine millions for this year may be a little too high. I have been given two estimates for 1956 by two people in a position to judge and they guess at 7½ millions and 6 to 8 millions respectively, (U.K. sales only). One of these kind friends has been brave enough to try and estimate the individual sales for European countries. He emphasizes the impossibility of any guarantee of accuracy but here are his figures:

Country	Estimated Units 1956
Denmark	200,000
Norway	150,000
Sweden	750,000
Finland	600,000
Holland	1,000,000
Switzerland	400,000
Italy	5,000,000
Belgium	300,000
France	3,500,000
U.K.	7,500,000
Total	19,400,000

This would mean that the total European sales for 1956 would be less than one thirteenth of the U.S. output! It would be unwise to read too much into these figures—as already stated it is a sheer impossibility to make accurate forecasts. No doubt there will be questions from Switzerland from whence comes a report of half a million cans of Sun-tan preparation made this summer. Just how many of these Swiss produced Sun-tans were actually sold in that country is not known. I am only too pleased that someone has been kind enough to investigate the position at all. Figures will also be complicated by the fact that they include home-produced and imported items. In view of the fact that utilitarian products figure largely in European sales, aerosol cosmetics and perfumes have a long way to go.

LET YOUR SCENT SELL YOUR PRODUCT

now . . .

Your own perfume can be impregnated into your advertising by your own printer using the exclusive FPC method.

We convert YOUR PERFUME Oil Concentrate into FPC COMPOUND which your printer can impregnate into any kind of paper on any printing press.

No more expensive blotters! No more dipping, smudging, spotting, ink dissolving!

FPC gives you spotless paper with pure, true, long-lasting fragrance

LASTING IMPREGNATION OF ANY PAPER AT COST OF REGULAR PRINTING

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INSERTS
STATIONERY
FOLDERS
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For Point-of-Purchase advertising, ask about

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our new electric device

For samples & information
CALL MO 3-1582
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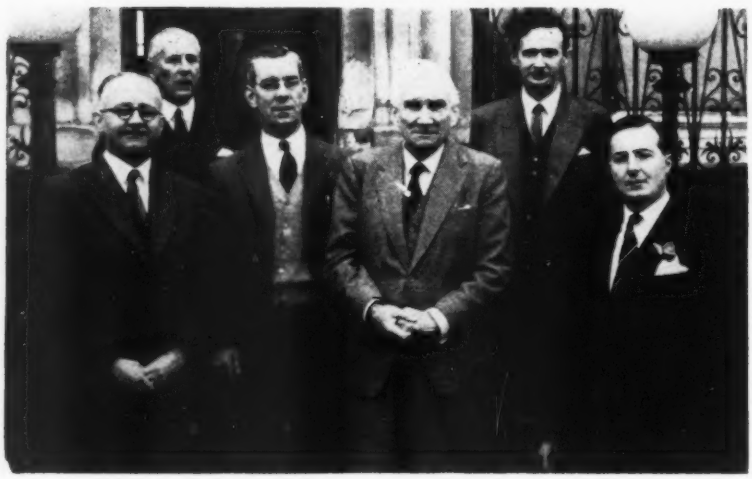
FRAGRANCE PROCESS CO., INC.
73 Sullivan Street
New York 12, N.Y.

News and Events

CRODA LIMITED HAS NEW HOME OFFICE



The home office of Croda Limited has changed quarters, and the new address is now Cowick Hall, Snaith, Goole, Yorkshire, England. Cowick Hall, new home of the firm, has a long history, for a large house has been on or near the present site for almost a thousand years, although the existing house dates back only to about 1675. The building was officially opened on December 17 by the Rt. Hon. Viscount Downe, O.B.E., whose family had their family seat at Cowick for hundreds of years until 1865 and were responsible for the erection of Cowick Hall.

Croda began in 1925 as a lanolin manufacturing firm, and has grown to produce raw materials and ingredients for use by a large cross section of industry. It now sells to every corner of the world, and has branches in the United States and Italy.

The Board of the organization were photographed during an inspection of the work in progress at Cowick Hall. From left to right are N. Duckels; H. Cannon; E. S. Lower; Sir Edward Crowe, chairman; L. Duckels; and F. A. S. Wood, managing director. The building, previously unoccupied, has been extensively renovated to make a modern headquarters for Croda.

Soap Industry Convention Will Stress Pioneering

The "pay-off" value of pioneering from Colonial soapmaking down to today's newest products will be stressed at the 1957 Soap Industry Convention, which will be held at the Woldorf-Astoria Hotel in New York City, January 23-25, under the sponsorship of the Assn. of American Soap & Glycerine Producers, Inc.

Speakers, who will forecast the 1957 economic climate as a basis for business decisions, include William M. Martin, Jr., chairman of the Federal Reserve Board, and Roy L. Reierson, vice president of the Bankers Trust Co. Others who will address the group are Dr. L. E. Burney, Surgeon General of the United States; Wheeler McMillen, who will review government research possibilities; and E. B. Osborn, president of Economics Laboratory, Inc., who will report on the activities of the year of the Association in relation to the progress of the industry as a whole.

Separate session will be held on January 23 of the Industrial Soap Division and the Fatty Acid Producers' Council. The Glycerine Producers' Assn. will hold its divisional meeting on January 24.

Glycerin Research Awards Will be Presented

Presentation of the 1956 Glycerin Research Awards by the Assn. of American Soap & Glycerin Producers, Inc., will be made on January 24 at the Waldorf-Astoria Hotel, New York City. The awards are presented annually for original research on the properties and uses of glycerin or glycerin derivatives.

During the afternoon trends affecting glycerin will be discussed, including the use of the material in alkyd resins, pharmaceuticals, and cellophane. Attendance by all who wish to register is welcomed.

New Quarters for Leeben Color Co.

Leeben Color & Chemical Co. has moved to new quarters at 103 Lafayette St., New York 13, N. Y. The telephone number is WOrth 6-0330. The firm supplies all types of colors for the food, drug and cosmetic industries.

Chicago SCC Holds First 1957 Meeting

On January 8 the Chicago Chapter of the Society of Cosmetic Chemists held the first meeting of the year with Paul H. Sherrick, technical director of E. H. Sargent & Co., as guest speaker. He discussed phases of instrumentation which are of particular interest to chemists working in the field of cosmetics.

New officers for the year, installed at the November meeting, are: Gustav Carsch, Lanolin Plus, Inc., president; Seymour Kornblau, Lady Esther Cosmetics, chairman-elect; Miss Theresa Bianco, Marcelle Cosmetics, Inc., secretary; and Don Laiderman, Toni Co., treasurer.

Avon Products, Inc. has opened a new Kansas City Branch building designed to offer every modern facility for increased service to Avon representatives and their customers in the Midwest. The installation covers 110,000 square feet, and is 10 miles from downtown Kansas City.

ADDITIVES AND STANDARD PROGRESS REPORTED TO ESSENTIAL OIL ASSN.

Officers: Secretary-Treasurer Frank F. Dittrich; President Pierre J. Coutin; Vice President Gert Keller; Managing Director Ray Schlotterer.

Executive Committee: Charles P. Walker, Michael Lemmermeyer, Robert E. Horsey and George McGlynn. John Cassullo was unable to be present.

While the Essential Oil Assn. of the U.S.A. voted that an outlay of money should not be expended for an extensive examination and pre-testing schedule on chemical additives for foods by an outside agency because the number and combinations are legion, the Legislative Committee of the association is set up to work on the problem, President Pierre Coutin reported to the membership at the annual meeting in New York on January 4. The industry feels, he pointed out, that the right of a court review of hasty administrative action is a must; and that the bill which is likely to come before the present Congress should not include all additives, particularly those now in use, and certain new ones to be introduced in the future. Otherwise he foresaw "witch hunting" which might lead to dire consequence to the industry.

A. T. Fiore, chairman of the Scientific Section reported that the infra red spectrophotometer has found its place as an analytical tool to supplement the specifications outlined by the Section. Various members are exploring the application of vapor phase chromatography in the field of odorous materials and this development is a substantially improved analytical tool. As a result the association is hopeful that these latest tools will help to reveal some of the heretofore unknown secrets of nature and possibly increase our knowledge of many materials widely used. Some significant advances in the anatomy of odor response have been made in the past year.

In the past year 14 new specifications have been added to the Association's roster of standards, making a grand total of 114. These included seven new essential oils: Balsam Copaiba, Oil of Black Pepper, Wormwood Oil, Juniper Oil, Oil Fir Needles Canadian, Calamus Oil and Birth Tar rectified. No shortage of aromatic chemicals for standardization is foreseen. Action on Cinnamic Aldehyde and Cedryl Acetate was postponed. Aromatics and flavormatics such as Isoamyl Butyrate and Acetate pose no problems in developing suitable standards.

Ethyl Butyrate was successfully standardized as was the widely used flavor product sold as Aldehyde C-16. Standards for Isobutyl Phenyl Acetate and Aldehyde C-8 and Trichlorphenyl Methyl Carbinyl Acetate were established. The standards of the association are accepted in world trade as standards of buying and selling procedures. At the present time the association is in communication with the Indian producers of Lemongrass Oil to insure its being acceptable to the American market.

Officers for 1957 unanimously elected are:

President, Pierre Coutin, Ph. Chaleyer, Inc.

Vice President, Gert Keller, Schimmel & Co.

Secretary-Treasurer, Frank E. Dittrich, Ungerer & Co.

Executive Committee: John Cassullo, Fritzsche Brothers, Inc.; Robert E. Horsey, Givaudan-Delawanna, Inc.; C. P. Walker, van Ameringen-Haebler, Inc.; Michael Lemmermeyer, Aromatic Products, Inc.; and George McGlynn, Magnus, Mabee & Reynard, Inc.

Arnold L. van Ameringen, first president, as well as the following former presidents were present: Hans Weseman, Harry Ryland, Waldo Reis, George McGlynn and Louis Gampert. Following the dinner entertainment was enjoyed.

Polak's Frutal Works Annual Sales Meeting

Polak's Frutal Works, Inc., held their annual sales meeting December 10-12 at their plant in Middletown, N. Y. All representatives from the United States and Canada attended. On December 11 the company gave a dinner party at the Orange County Golf Club for the executive, sales, and technical staff and their ladies.

COSMETIC CAREER WOMEN ADDRESSED BY LILY DACHÉ

Guest speaker at the annual Christmas luncheon of Cosmetic Carrer Women at the Waldorf-Astoria Hotel was Miss Lilly Daché, world famed hat designer, and now president of General Beauty Products. She discussed the marriage of beauty to science during recent years in her talk entitled, "The New World of Beauty."

Members and guests brought over 200 Christmas gifts for children which were divided between Barnabas House and St. Luke's Hospital in New York City.

On the dais were (left to right) Miss Neva Bradley; Miss Peg Burrow; Miss Daché; Miss Kay Colton; Miss M. Constance Breck; and, on the far right, Miss Florence E. Wall.

GIVAUDAN-DELAWANNA HONORS TWO 25 YEAR EMPLOYEES

Two employees were presented with gold Swiss watches in honor of their twenty-fifth anniversary with the company at the annual Christmas party of Givaudan-Delawanna, Inc., in December. The two twenty-five year veterans, who brought the total number to sixty-five, are Simon Bigoss, of the Delawanna plant, and Theodore Bumiller, a perfumer of the New York laboratories.

E. R. Durrer, president; H. F. Duffy, treasurer; and Dr. Max Luthy, vice president in charge of production and research, addressed approximately four hundred of the company's employees who attended the annual gathering.

Roure-Dupont Officials Are on the Move

Louis Amic, president of the Ets. Roure-Bertrand Fils & Justin Dupont, Paris, France, has returned to Europe after a stay of one month in the United States. It was one of the many visits he has made to this country in the past decades in the interest of the international perfume business.

Jacques d'Aigremont, president of Roure-Dupont, Inc., has departed on his annual trip to the major South American countries.

Jean Sfiras, director of technical research of the Ets. Roure-Bertrand Fils & Justin Dupont, Argenteuil, France, has completed a one month stay in the United States, when he reported to the technicians of Roure-Dupont on the discoveries of his department in the fields of perfumery, cosmetics and industrial products.

Mojonnier Associates, Inc. Enlarges Sales Staff

Mojonnier Associates, Inc., manufacturer of aerosol filling equipment, has revealed the expansion of its sales organization. In addition to the home office in Franklin Park, Ill., territorial offices have been opened in New York City and St. Louis, Mo.

Edward H. Zellar is in charge of the New York City office, and John Bader the St. Louis office. Robert Hill, a new member of the organization, will service the Michigan, Ohio, West Virginia, Kentucky, Indiana, Wisconsin and Illinois area.

Ungerer & Co. Has Sales Meeting

A meeting of the national sales organization was held by Ungerer & Co. at the New York office on November 14-16. In attendance were the entire sales force and the head of the Ungerer Paris office. The initial session was opened by Kenneth G. Voorhees, president, who outlined the future plans of the company.

W. A. Bush, secretary, presided over the several sessions and introduced various members of the Ungerer executive and technical staffs who conducted discussions on subjects representing many facets of company business.

The last day of the meeting was devoted to a trip through the Ungerer plant in Totowa, N. J.

New York Chapter of SCC To Hear Dr. James Dutcher

The New York Chapter of the Society of Cosmetic Chemists will hold its first meeting of 1957 on January 23 at the Brass Rail, Fifth Avenue and 43rd Street. The guest speaker will be Dr. James Dutcher, of the Squibb Institute of Therapeutic Research, who will speak on "Recent Chemical Studies of Antifungal and Other Antibiotics." He will also explore their potential use in dermatology and cosmetics.

Chemical Credit Men to Meet in Philadelphia

The third annual Chemical Credit Men's Convention will be held at the Warwick Hotel in Philadelphia, Pa., on February 23-24. Sponsored by the National Chemical Credit Assn., the program will include talks by experts in the chemical credit field, and panel and group discussions.

Toilet Goods Excise Taxes Reported Up

The Internal Revenue Commission has reported collections of excise taxes for the toilet goods category for the quarter ended September 30, 1956 as $20,948,000. This compares with $18,490,000 for the same period in the previous year.

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Jasmin de Provence B
*** Muguet Isoflor A**

AROMATIC CHEMICALS •
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Jasmin Fleurs D
Rose d'Orient #1
Honeysuckle No. 500
Jonquille Isoflor
Tuberose Isoflor

PERFUME SPECIALTIES
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Lilas Isoflor B
Violette de Provence

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Descollonges INC.

SPOTLIGHT News...

Packaging in collapsible metal tubes is expected to continue at the high levels reached in 1955 and 1956, forecasted Lester B. Platt, executive secretary of the Collapsible Tube Manufacturers Council recently. Tubes for toiletries may approach the 1955 production of 695 million units, highest in the industry's history, he said.

The chemical industry can look forward to "moderate increases in sales volume and relatively stable prices in 1957," but higher costs will produce a squeeze in profit margins, John E. McKeen, president, Chas. Pfizer & Co., Inc., reported recently.

Until January 31 an eight ounce bottle of Mary Chess Cream Body Massage may be had at one-half the regular price of $3.

Tussy Cosmetics and toiletries took off on an 18-day African Safari in December via Sabena Belgian World Airlines. The 14,000 mile air trip to the Belgian Congo was made to take photographs to be used as the basis for a department store promotion and publicity tie-in by Tussy and Sabena during the spring of 1957. Tentative plans call for aggressive promotion in ten cities in the U. S. serviced by Sabena Airlines.

Wrap better and sell more is the theme of the Canadian National Packaging Assn. The accent is on catching the glance of the shopper as she scans the store shelves. These improvements are contemplated: cartons which pour out the exact amount of the contents desired such as soap flakes, etc.; Stronger, tighter, fully sealed plastic wrapping; Greater use of aluminum; and better sealing but easier to remove caps.

A Treasury of Spices is the subject of a book edited by Lester W. Jones published by the American Spice Trade Assn. to commemorate its 50th anniversary. It covers the history of spices, description and sources of spices, statistics and a directory of companies in the spice and associated industries as well as information on the association. The book sells for $4.50.

Cosmetic Excise Tax Collections for the fiscal year of 1956 were $321,896,000 as compared with the fiscal year of 1955 which were $292,145,000.

The New Arden Line for Men consisting of after shave lotion, men's cologne, men's hand and bath soap, talc, after shave lotion and foam shaving cream attractively packaged in black containers with gold lettering recently launched is reported to be ringing cash registers wherever it has ben displayed. Prices range for particular items from $3.50 to $7.

Shulton's Old Spice radio commercials were among eight recipients honored with an award by the Radio Advertising Bureau for the most effective radio commercials broadcast in 1956.

Bourjois Inc. Sales for the six months ended October 31 were up 19% with net profits before taxes of $1,020,000 according to the report of Lewis F. Bonham, president.

The annual industry liaison panel of the Food Protection Committee of the National Research Council met in Washington, D. C., December 13. Harold L. Janovsky, chairman of the Food Additive Committee of the Flavoring Extract Manufacturers Assn., represented the association at the meeting.

A petition to establish definitions and standards of identity for orange juice, stabilized orange juice, processed orange juice and reconstituted orange juice has been filed with the Food & Drug Administration by the Flavoring Extract Manufacturers' Assn.

Sun Tube Corp. has been sold to the American Can Co. by Bristol-Myers Co. The transaction included Sun Tube Corp. of Canada and Tubos de Estano of Mexico. No changes are planned in personnel or operations.

Using helicopter service from the greater Cincinnati airport direct to his factory 20 miles away, Robert G. Fries, Jr., vice president of Fries & Fries Inc., saves many an hour. The service picks up Mr. Fries at the plant to make nearby flight connections.

The Northam Warren Corp. has announced the biggest advertising, promotional and product improvement plans in the history of the company for 1957. An entirely new formula for Cutex nail polish is included in the proposed changes.

The Toni Co. is sponsoring a cooperative education program with Northwestern University's School of Commerce, starting in April, 1957. Several students with junior standing in the School of Commerce will be chosen on the basis of scholastic record to participate in combined classroom work and practical business and industrial experience.

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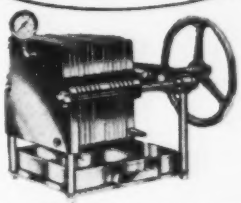
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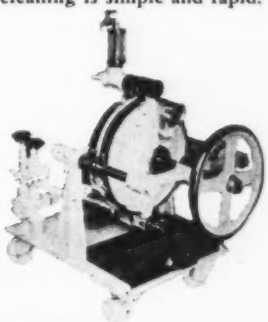
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RICHFORD CORP. MOVES OFFICE AND WAREHOUSE

Richford Corp. has recently moved its main office and warehouse facilities to its own building at 3618 Oceanside Road, Oceanside, N. Y. On January 1 the company opened showrooms at 350 Fifth Ave., New York City, in the Empire State Building.

Other sales offices for the organization, which produces Spillproof bottles, Touch-N-Flo dispensers and other items for the cosmetic trade, include: Buckingham Associates, Chicago, Ill.; Paul M. Wagner, Dallas, Tex.; Glenn Kingham, Fort Lauderdale, Fla.; R. G. F. Byington & Co., Los Angeles, Calif.; and Consolidated Bottle Co., Toronto, Canada.

Program of the Soap and Glycerine Producers Meeting

The program of the annual industry convention of the Assn. of American Soap & Glycerine Producers, Inc., to be held at the Hotel Waldorf-Astoria, New York City, January 23-25, follows:

January 23, Advance registration for all.

10 a.m.—Meeting of the Industrial Division.

10:30 a.m.—Meeting of Technical Advisory Committee and Fatty Acid Division.

12:30 p.m.—Joint luncheon, Fatty Acid and Industrial Divisions and Technical Advisory Committee.

2:15 p.m.—Meeting of Fatty Acid Division.

5 p.m.—Reception and cocktail party.

January 24, 9:30 a.m., opening session of the general association. "President's Address and Review of the Year," by E. B. Osborn, president. "Business Outlook, 1957," by Roy L. Reierson. "Report from a Scorekeeper," by Burton V. LeVee.

11 a.m.—Glycerine Division meeting.

12:30 p.m.—Luncheon. Presentation of Glycerine Awards. "Money Policy," by William McChesney Martin, Jr., Chairman, Board of Governors, Federal Reserve System.

2:15 p.m.—Glycerine Division. "Glycerine in Alkyd Resins," by George R. Somerville. "Glycerine in Pharmaceuticals and Cosmetics," by Frank J. Steele. "The Cellophane Outlook," by Thomas H. Derby.

4 p.m.—Washable Cotton Fashion Show.

January 25, 7:30 a.m.—Breakfast.

9:30 a.m.—General session. "Continuing Research Related to Detergents In Water and Sewage Treatment," by Henry V. Moss. "How the Association Promotes Cleanliness," by William G. Werner. "Making Product Research Pay," by Milton Harris. "The BAN Story," by J. J. Clarey. "The Jet Bon-Ami Story," by Dr. Daniel H. Terry.

12:30 p.m.—Luncheon. "Cleanliness and Health," by Dr. L. E. Burney.

2:10 p.m.—Annual business meeting.

2:30 p.m.—Board of Directors meeting.

6:30 p.m.—Reception.

7:30 p.m.—Annual banquet.

Additions to Sales Staff of Pennsalt Isotron Sales

Jean W. Baer and John H. Haslip have been added to the sales staff of Pennsalt Chemicals new line of Isotron aerosl propellents and refrigerants. Both men have been assigned to sales of propellents under the direction of Supervisor Wiley J. Pickett.

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Evans Research Corp. Awards Service Pins

Long-time employees of Evans Research and Development Corp. were presented with service pins at a luncheon at the Chemists' Club in New York City by Dr. Ralph L. Evans, president. James Lawrie, secretary and a director of the company, received a 25-year-pin. Others were awarded 20-year and 10 year pins.

Bourjois Has Increase In Sales and Profits

A substantial increase in net sales and profits for the six months ending October 31, 1956 has been announced by Bourjois, Inc. Net sales showed a gain of 19 per cent and profits totaled $1,020,000 for an increase of $162,000 over the corresponding period in 1955.

Fragrance Foundation Fetes the Press

Over 150 members of the press were feted at a cocktail party in their honor by the Fragrance Foundation on December 4 at the Hotel Savoy Plaza, New York. Jean Despres, president of the Foundation and executive vice president of Coty, Inc., welcomed the guests with an expression of appreciation for their cooperation in bringing fragrance information to the attention of the public.

Rutgers Gives Courses For Cosmetic Personnel

A non-credit course in pharmacology for pharmacists, chemists, drug and cosmetic personnel, and others, will be offered by Rutgers Extension Division and Pharmaceutical Extension Service beginning on January 29. The survey will be given by Dr. Eaden F. Keith, and will deal with fundamental principles of pharmacology and therapeutics with emphasis on the physiological basis of drug action. Most major classes of drugs will be studied.

Dedicate Warren Building Of Massachusetts Hospital

The new $4,000,000 Warren Building of the Massachusetts General Hospital was dedicated on December 3. Speakers at the exercises included Francis C. Gray; Dr. Edward D. Churchill; Dr. Dean A. Clark, all of the Hospital; Dr. George Packer Berry, Harvard Medical School; and Dr. Wilder Graves Penfield, Montreal Neurological Institute.

Charles of the Ritz Expands Executive Committee

Robert Emmett Curran, executive vice president of Charles of the Ritz, has announced the expansion of the firm's Executive Management Committee, which is now composed of the following in addition to Mr. Curran:

Richard Salomon, president and chairman; George Jablow of the accounting firm Jablow & Jablow; Marc See, vice president in charge of purchasing and export, and director of the French Co.; Maxwell F. Bower, vice president in charge of sales.

Milton H. Dale, director of co-ordination; R. H. Schumacher, vice president and director of Charles of the Ritz Salon Co.; Ernest R. Sloan, production and plant manager.

Dr. Sebastien Sabetay (right) was welcomed to the display of Dragoco Holzminden at the IVe Salon de la Chimie in Paris by Dr. H. K. Thomas, who is connected with Dragoco's research department. Dr. Sabetay is editor of the magazine *Industries de la Parfumerie*.

Negro Cosmetic Company Aims for National Field

Carmen Cosmetics, Inc., Detroit, Mich., has launched a sales-promotion-marketing campaign slated to place cosmetics made for Negro women into the national market with an approach mirroring those used by the leading brands. Theme of the campaign is "Everyday Beauty for Every Smart Woman." It is said to be the first Negro line complete from powder to perfume. Items will retail from $1.25.

The advertising campaign is being handled through Specialized Marketing, division of Student Marketing Institute, Inc., New York City. Heaviest concentration at the start will be in southern and southwestern states in forty major city markets in seventeen states. A full-scale national advertising drive is planned for later in the year. Sales will be made directly to retail cosmetic outlets.

A humorous comment by Maison G. deNavarre was well received by those present on the occasion of his reception in Paris at the Maison de la Chimie. On the dias are Marcel Gattefosse, president of the Societe Francaise de Cosmetologie; Mr. deNavarre; F. V. Wells, editor of *Soap, Perfumery & Cosmetics;* and Rene Colson, former president of the Societe.

For canine glamour Masterpiece Products has developed Masterpiece Shampoo for Dogs, with a specially designed formula for Lassie's skin and fur. The package is pink and turquoise.

Tussy Advertising to Emphasize Brand Name

A million-dollar campaign to strengthen brand identification for all products in its line has been launched by Tussy Cosmetiques for the second half of the 1956-57 advertising year. A division of Lehn & Fink Products Corp., Tussy in the past has stressed the particular products in the line. Beginning in January each of the company's print advertisements will carry strong "Tussy" identification.

This second phase of the 1956-1957 $2 million campaign rounds out the biggest advertising year, dollar-wise, in Tussy's history.

Schiaparelli, Inc. President Makes European Journey

Claude Bernheim, president of Schiaparelli, Inc. left New York on December 14 for an extensive six week trip throughout Europe. The purpose is to promote and establish licensing programs for Schiaparelli hoisery and other interests. He expects to return during the first week in February.

BIMS of New York 25th Anniversary Dinner

BIMS of New York, the well known association of buyers, importers, manufacturers and salesmen, is to celebrate its 25th anniversary with a dinner in the Sert Room and Terrace Court of the Waldorf-Astoria Hotel on the evening of February 28. It will be a black tie affair with all tables reserved.

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Robert G. Hackwith Joins Bon Ami Co.

Robert G. Hackwith has been appointed to the new post of director of marketing planning and advertising of Bon Ami Co., New York. He was formerly sales manager of the Duncan Hines division of State Brand Creameries.

OBITUARY

Jean Gerard

Jean Gerard, director general of the Societe de Productions Documentaires, Paris, France, died on November 28 after a short illness. He had been active in the technical press of his country and of the world.

Leland P. Symmes

Leland P. Symmes died on November 30. He became associated with the Baker Extract Co. in 1926 as sales manager, and subsequently served as vice president and president. On January 1, 1956 he was elected Chairman of the Board and Chief Executive Officer.

Mr. Symmes served as president of the Flavoring Extract Manufacturers' Assn. during the years 1938-39, and held various other offices in the organization both before and after that, acting as Secretary during the years 1946-1955. He rendered great service to the Association and to the flavoring products industry during his lifetime.

The Toni Co. booth at the 1956 meeting of the American Academy of Dermatology and Syphilology in Chicago featured the rigorous safety testing which a new cosmetic ingredient undergoes before testing. Pictorial displays included irritancy evaluation on human subjects.

Donald M. Smith

Donald M. Smith, one of the organizers of the Sun Tube Co., and later manufacturers representative for the E. N. Rowell Co. and subsequently on the staff of the AMERICAN PERFUMER, died December 4 at the age of 62 years. At the time of his death he was president of Donald M. Smith Associates, agents for the bactericidal lamps division of the Westinghouse Corp.

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PERSONALITIES

Edmund K. Baloun has been named manager of the new sales office opened by the Pacific Coast Division of Owens-Illinois Glass Co. in San Jose, Calif. Assigned to the office with him are Harry J. Trauner and Herbert P. Brennecke, both salesmen in the San Francisco branch.

Leon Gefern, manager of the French affiliate of Felton Chemical Co., attended the year end meetings of the company in

Leon Gefern

New York. He has directed the activities of Felton's manufacturing branch located in Versailles, and he also acts as general purchasing agent of continental essential oils and natural aromatic products for the Felton organization.

Dr. George F. Reddish received the 1956 Achievement Award of the Chemical Specialties Manufacturers' Assn. for outstanding work in the fields of public health, disinfection and antisepsis. The award was presented at the meeting of the organization in Washington in December.

Elizabeth Arden, president of Elizabeth Arden Sales Corp., has accepted the chairmanship of the Cosmetics Division of the National Foundaiton for Infantile Paralysis annual campaign for the seventh consecutive year.

Richard Reising is the new production manager of the Plume & Atwood Mfg. Co.

Paul Carey and **James M. Boohecker** have been elected vice presidents of Lehn & Fink Products Corp. They are both members of the board of directors and general managers of major subsidiaries. Mr. Carey remains in charge of Tussy Cosmetiques and Mr. Boohecker is still general manager of Dorothy Gray, Ltd.

Edmund R. Beckwith, Jr. has been elected president of the newly merged Crookes-Barnes Laboratories, Inc., division of Chemway Corp.

Dr. Leopold Safrin has left the Wilson Co., which has discontinued its Camden, N. J., plant, to assume a position with Lightfoot-Schultz, Inc., Hoboken.

Miss Ethyl Hobson has been promoted to sales manager of Alexandra de Markoff.

Dave Engel, senior salesman for Charles of the Ritz for 28 years, has relinquished all territory responsibilities. His new work is in an advisory capacity.

Miss Marie Castrigno has been promoted to the new position of administrative assistant to Milton H. Dale, director of co-ordination for Charles of the Ritz.

Miss Marguerite Mischler has been named to the new post of administrative assistant of Maxwell F. Bower, vice president in charge of sales for Charles of the Ritz.

William S. Landon has been elected a director and member of the executive committee of Warner-Lambert Pharmaceutical Co. John S. Hewitt will continue as president of Anahist Co., formerly a Nepera Chemical Co. subsidiary. Both are former officers of Nepera, which was acquired by Warner-Lambert recently.

Joseph E. Howe, Jr., is the new representative for Mary Chess, Inc., in New England and New York state. He was formerly sales representative for Harriet Hubbard Ayer, Roger & Gallet, and the Herb Farm.

Dr. Ernest Guenther, vice president and technical director of Fritzsche Brothers, Inc., spent three weeks in Europe in November and December where he attended the Second International Symposium of Synthetic and Natural Perfumes and Cosmetology. He presented a colored motion picture film in the Salle des Conferences du Musee Guimet at a meeting whose audience included many of the leaders of the French perfume and cosmetic industries.

Rudolph P. Neptun, vice president at the New York Quinine & Chemical Works, Inc., has been renamed treasurer of the Manufacturers' Section of the Federal Wholesale Druggists Assn.

Herbert Rothschild has been appointed merchandising manager of the Beauty Sales Division of Helene Curtis Industries, Inc. Charles Cooper is the sales promotion manager of the same division.

Godfrey W. Dyne, vice president and a director of American-British Supplies, Inc., was honored by his associates at a dinner in New York City on December 20. He retired on December 31 after 40 years in the American chemical industry, 28 of which were with American-British Chemical Supplies.

Claude Forter is the advertising manager of the International Division of

Claude Forter

Shulton, Inc. He has been associated with Grant Advertising Agency.

S. L. Mayham, exec. v.p. of the Toilet Goods Assn., sent novel Christmas greetings this year—a complete play with incidental music which he authored. Mr. Mayham had his opus, "The Black Ram," printed and bound into a book, complete with best wishes for the holidays.

Miss Mona Mohin has been promoted to administrative assistant to Robert E. Curran, executive vice president of Alexandra de Markoff.

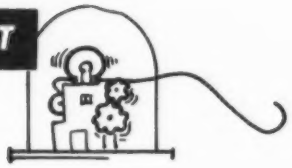
Masaji Takata, director of Takata Aromatic Chemical, Inc., Amagasaki City, Japan, is spending two months visiting the trade in the United States. He expects to return early next month.

Edmond Desperroes of Jean d'Albret, Paris, France, has returned home after visiting the trade in the United States.

Alfred Wagner, well known German flavor and perfume specialist, has joined the staff of Jean A. du Crocq, Jr., Ltd., Huizen, Holland.

Walter A. Munns has been elected executive vice president of Smith Kline & French Laboratories.

MARKET REPORT



Price Trend in Essential Oils Largely Upward . . .

THE PRICE trend in essential oils was largely upward in the closing month of last year with several of the spice oils registering rather substantial gains. Lavender and geranium oils likewise displayed a firmer tone, and with distillation of the mint crops have been completed, some pleted, some trade observers were inclined to take on a decidedly firmer view on both spearmint and peppermint.

Mounting labor and other costs continued to have an influence on a number of chemicals. A major producer of anhydrous ethyl alcohol announced an increase of 2 cents in the differential between anhydrous or 200 proof alcohol and 190 proof ethyl alcohol. Anhydrous ethyl alcohol will in the future be priced 7¢ per gallon over the quotations for 190 proof ethyl alcohol. The old differential of 5 cents a gallon had been in force since 1952.

PRICE CHANGES

Advances	Current	Previous
Oil bergamot	$10.50	$9.15
Oil cardamom	$41.00	$38.00
Oil clove bud	$2.85	$2.75
Oil geranium—		
Algerian	$14.00	$13.00
Bourbon	$14.25	$13.75
Oil lime—		
Expressed	$7.00	$6.25
Distilled	$4.75	$4.50
Oil nutmeg	$13.75	$12.50
Oil mace	$11.50	$8.40
Oil pimento leaf	$2.75	$2.65
Cocoa butter	0.72	0.62
Oil patchouli	$6.00	$5.50
Oil rose, Bulgarian, oz.	$48.00	$38.00
Oil sandalwood	$14.00	$13.85
Oil celery	$14.00	$12.75
Oil ginger	$20.00	$19.00
Castor oil, No. 1., tanks	0.22½	0.21½
Coconut oil, crude, coast	0.11½	0.11¼
Copra, coast, ton	$159.00	$155.00
Gum rosin, water glass, South, cwt.	$8.75	$8.45
Declines		
Menthol, Brazilian	$6.20	$6.25
Vanilla beans—		
Bourbons	$7.00	$7.50
Mexican whole	$7.50	$8.00
Mexican cuts	$7.00	$7.50
Tallow, fancy	0.07⅞	0.08

Prices per pound unless otherwise specified.

OIL BERGAMOT ADVANCES—

Prices on bergamot moved upward for the first time in several months. Trade slowed down toward the close of last month but dealer stocks were generally on the light side. The advance in spot prices was caused by a jump in the Consortiums' price in Italy. The advance in the primary market amounted to about $2.25 per kilo.

GUMS EDGING UPWARD—

Spot prices for gum arabic rose about a cent per pound over the past month with amber sorts being closely held at 20 to 21 cents. Local dealers and importers did not appear willing to sell their holdings in view of the uncertainty regarding future costs of replacements at Port Sudan. Tragacanth prices remained high and largely nominal as the result of market conditions in Iran. Benzoin and myrrh remained firm and olibanum siftings were difficult to obtain.

GLYCERIN UNSETTLED—

The outlook in glycerin has become more confused as the result of the slightly higher prices recently paid for some rather substantial lots of foreign crude. Only an occasional tankcar of domestic crude glycerin was available in the market. Consequently, domestic buyers paid slightly higher prices for foreign material because of the sizeable quantities involved. Meanwhile stocks of glycerin principally refined have continued to build up in the market with latest estimates placing the total at over 65 million pounds.

ROSEWOOD SETTLES—

After a slight upward trend, rosewood oil prices settled back to the levels in force at the start of the period under review. Some shipments out of Peru had been held back thus causing a temporary firmer situation here.

FORWARD DEMAND FOR VANILLA—

Because of lower prices, a considerable amount of forward business was booked in new crop Bourbon vanilla beans for April-June arrival. About half of the estimated crop of 350 tons was sold to American buyers. Earlier estimates placing the new crop of Mexican beans at 300,000 pounds may not be realized. More recent estimates have placed the crop at about 250,000 pounds. Curers have paid such high prices for green beans that they may later find it difficult to complete with sellers of Bourbon beans in this market.

CLOVE OIL SALES GAIN—

A greater amount of activity developed in clove oil, especially the material derived from clove leaves. Prices on bud oil edged upward as the result of a firmer trend in the cost of the spice. The activity in leaf oil was reported to be largely for the account of industrial users for its eugenol content.

GERANIUM SENSITIVE—

Internal conditions in Algeria served to make for a general feeling of uncertainty regarding replacements and future costs. Local prices on both Algerian as well as Bourbon geranium oils moved irregularly to higher with trade observers anticipating a highly sensitive market in the months ahead.

MINT OILS FIRM—

Firm conditions prevailed in spearmint and peppermint at the close of last year and a further shrinkage in the supply of some of the lower quality oils has contributed to a decidedly stronger outlook for the current quarter.

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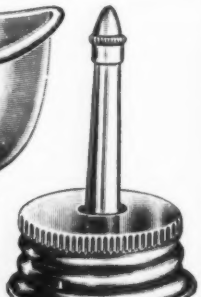

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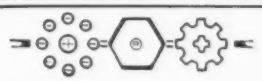
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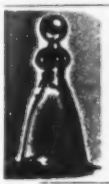
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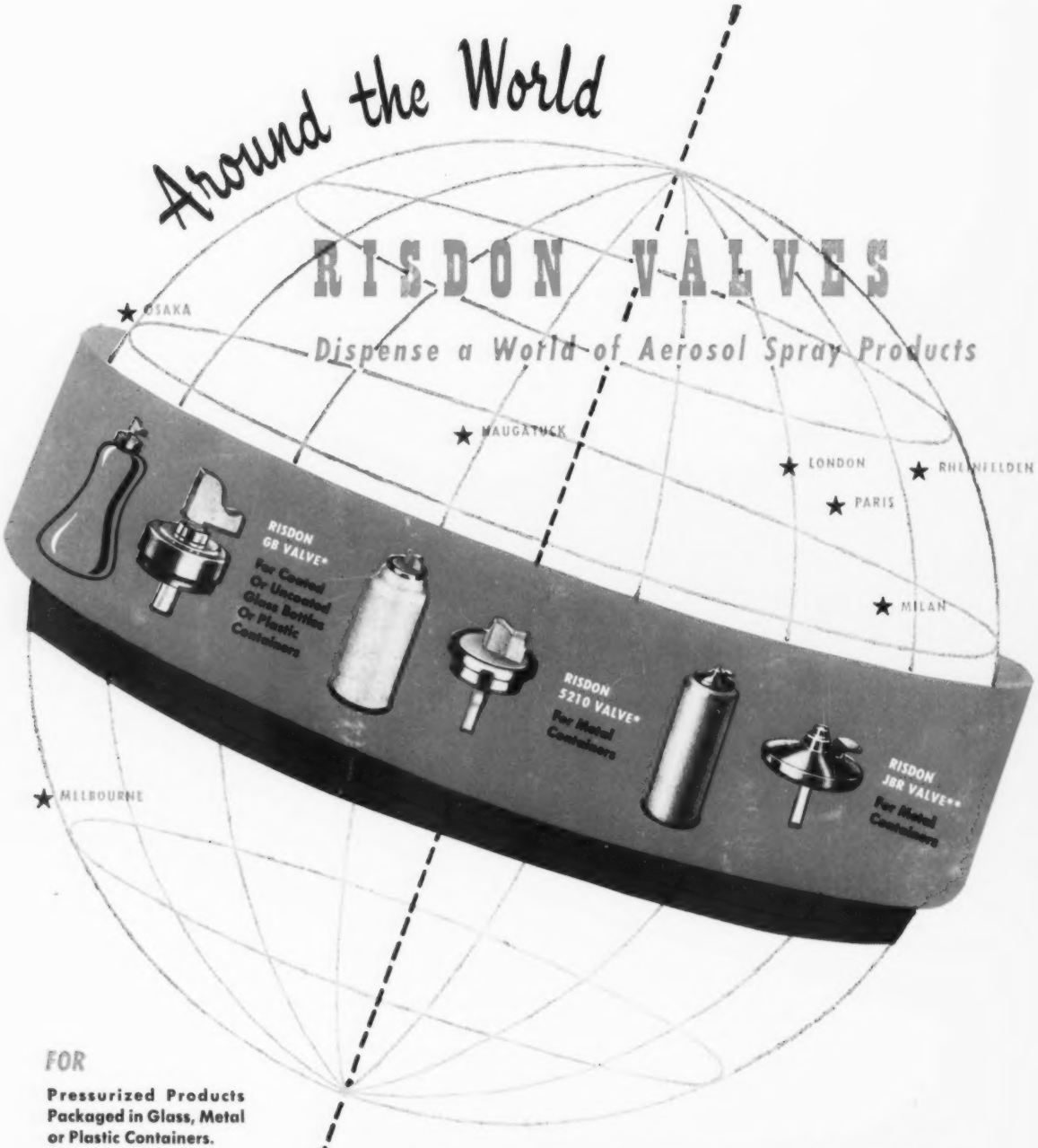

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